1. Write code for a simple user registration form for an event using micro services frameworks. Registration.html

```
<!DOCTYPE html>

<html>

 <head>

    <title>Registration Page</title>

    <style>

    body {

        font-family: Georgia, 'Times New Roman', Times, serif;

        background-color: rgba(174, 146, 207, 0.744);

        color: rgb(6, 78, 42);

      }

      form {

        width: 60%;

        margin: 0 auto;

        padding: 20px;

        background-color: rgb(245, 190, 234);

        border-radius: 10px;

        box-shadow: 0px 4px 6px rgba(0, 0, 0, 0.2);

      }

      input[type="submit"] {

        font-size: 20px;

        padding: 12px 20px;

        background-color: rgba(174, 146, 207, 0.744);

        color: rgb(6, 78, 42);

        border: none;
```

```
            border-radius: 5px;

            cursor: pointer;

            width: 100%;

        }

        .radio-group {

            display: flex;

            justify-content:center;

        }

        .radio-group label {

            margin-right: 20px;

        }

    </style>

</head>

<body>

    <center>

        <h2>Register</h2>

        <form id="registerForm" action="thankyou.html" method="POST">



            <label for="firstname">First name: </label>

            <input type="text" id="firstname" name="firstname" required /></br>

            <br></br>



            <label for="lastname">Last name: </label>

            <input type="text" id="lastname" name="lastname" required /></br>

            <br></br>



            <label for="email">Email:</label>
```

```
<input type="email" id="email" name="email" required /></br>
<br></br>


<label for="password">Password:</label>
<input type="password" id="password" name="password" required /></br>
<br></br>


<label for="confirmpassword">Confirm Password:</label>
<input type="password" id="password" name="confirmpassword" required /></br>
<br></br>


<label for="gender">Gender:</label><br>
<br>
<div class="radio-group">
  <div>
    <input type="radio" id="male" value="male" name="gender" required>
    <label for="male">Male</label>
  </div>
  <div>
    <input type="radio" id="female" value="female" name="gender" required>
    <label for="female">Female</label>
  </div>
  <div>
    <input type="radio" id="other" value="other" name="gender" required>
    <label for="other">Other</label>
  </div>
</div>
```

```
<br></br>


<label for="state">State:</label>

<input type="text" name="state" required /></br>

<br></br>


<label for="country">Country:</label>

<input type="text" name="country" required /></br>

<br></br>



<label for="dob">Date Of Birth: </label>

<input type="date" name="dob" required /></br>

<br></br>


<label for="course">Choose a course:</label>

<select name="course" id="course">

   <option value="CSE">CSE</option>

   <option value="AIML">AIML</option>

   <option value="ECE">ECE</option>

   <option value="EEE">EEE</option>

<option value="IT">IT</option>

</select>


<br><br>

<br>

<input type="submit" value="Register">
```

```
        </form>
      </center>
  </body>
</html>
```

Thankyou.html

```
<!DOCTYPE html>
<html>
<head>
  <title>Thank You</title>
  <style>
      body {
          font-family: Georgia, 'Times New Roman', Times, serif;
          background-color: rgba(174, 146, 207, 0.744);
          color: rgb(6, 78, 42);
          text-align: center;
          margin-top: 100px;
      }
  </style>
</head>
<body>
  <h2>Thank You for Registering!</h2>
  <p>We appreciate your interest and will get back to you soon.</p>
</body>
</html>
```

Program 2: Explore Git and Git Hub commands.

Git is a version control system that helps you track changes to files over time. Git maintains a local repository, where you commit changes to the project before pushing it to the central repository on Git Hub.

GitHub is a developer platform that allows developers to create, store, manage, and share their code. It uses Git software, providing the distributed version control of Git plus access control, bug tracking, software feature requests, task management, continuous integration, and wikis for every project.

Install Git from- https://git-scm.com/downloads

Launch Git GUI- open Windows Start menu, type git gui and press Enter (or click the application icon)

Git Commands: working with local repositories

git init

The command git init is used to create an empty Git repository.

After the git init command is used, a .git folder is created in the directory with some subdirectories. Once the repository is initialized, the process of creating other files begins.

git add

Add command is used after checking the status of the files, to add those files to the staging area.

Before running the commit command, "git add" is used to add any new or modified files.

git commit

The commit command makes sure that the changes are saved to the local repository.

The command "git commit –m <message>" allows you to describe everyone and help them understand what has happened.

git status

The git status command tells the current state of the repository.

The command provides the current working branch. If the files are in the staging area, but not committed, it will be shown by the git status. Also, if there are no changes, it will show the message no changes to commit, working directory clean.

git config

The git config command is used initially to configure the user.name and user.email. This specifies what email id and username will be used from a local repository.

When git config is used with --global flag, it writes the settings to all repositories on the computer.

```
git config --global user.name “any user name”
git config --global user.email <email id>
```

git branch

The git branch command is used to determine what branch the local repository is on.

The command enables adding and deleting a branch.

```
# Create a new branch
git branch <branch_name>
# List all remote or local branches
git branch -a
# Delete a branch
git branch -d <branch_name>
```

git checkout

The git checkout command is used to switch branches, whenever the work is to be started on a different branch.

The command works on three separate entities: files, commits, and branches.

```
# Checkout an existing branch
git checkout <branch_name>
```

```
# Checkout and create a new branch with that name
git checkout -b <new_branch>
```

git merge

The git merge command is used to integrate the branches together. The command combines the changes from one branch to another branch.
It is used to merge the changes in the staging branch to the stable branch.

```
git merge <branch_name>
```

Git Commands: Working With Remote Repositories

git remote

The git remote command is used to create, view, and delete connections to other repositories.
The connections here are not like direct links into other repositories, but as bookmarks that serve as convenient names to be used as a reference.

```
git remote add origin <address>
```

git clone

The git clone command is used to create a local working copy of an existing remote repository.
The command downloads the remote repository to the computer. It is equivalent to the Git init command when working with a remote repository.

```
git clone <remote_URL>
```

git pull

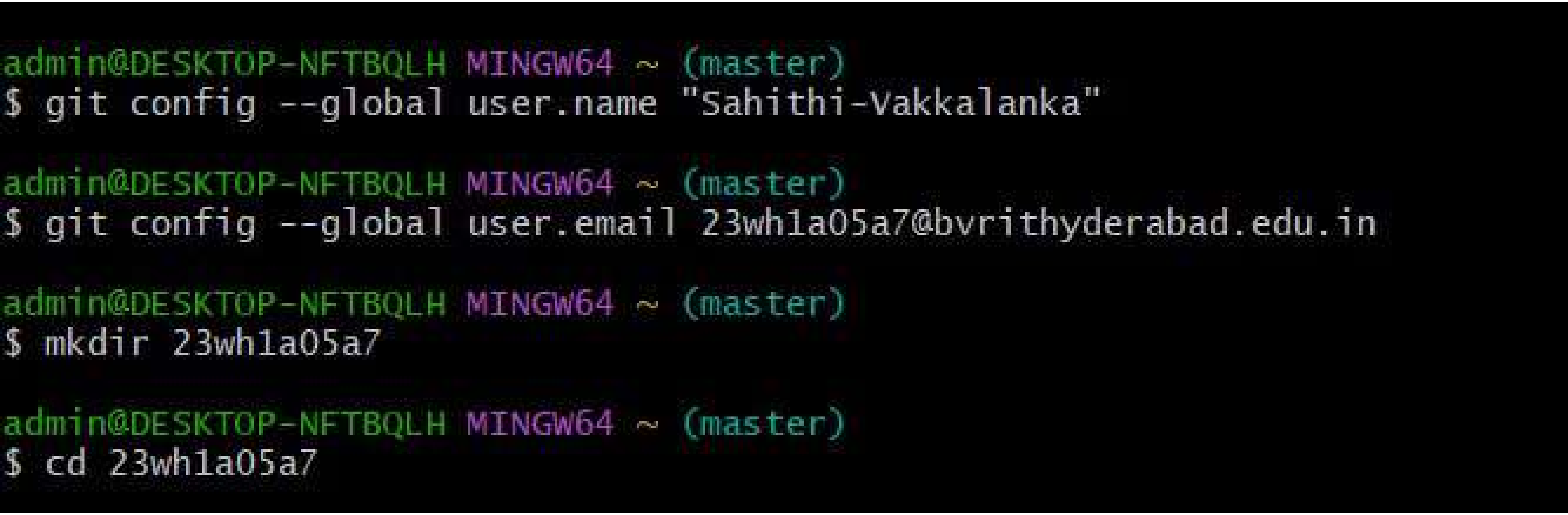
The git pull command is used to fetch and merge changes from the remote repository to the local repository.
The command "git pull origin master" copies all the files from the master branch of the remote repository to the local repository.

```
git pull <branch_name> <remote URL>
```

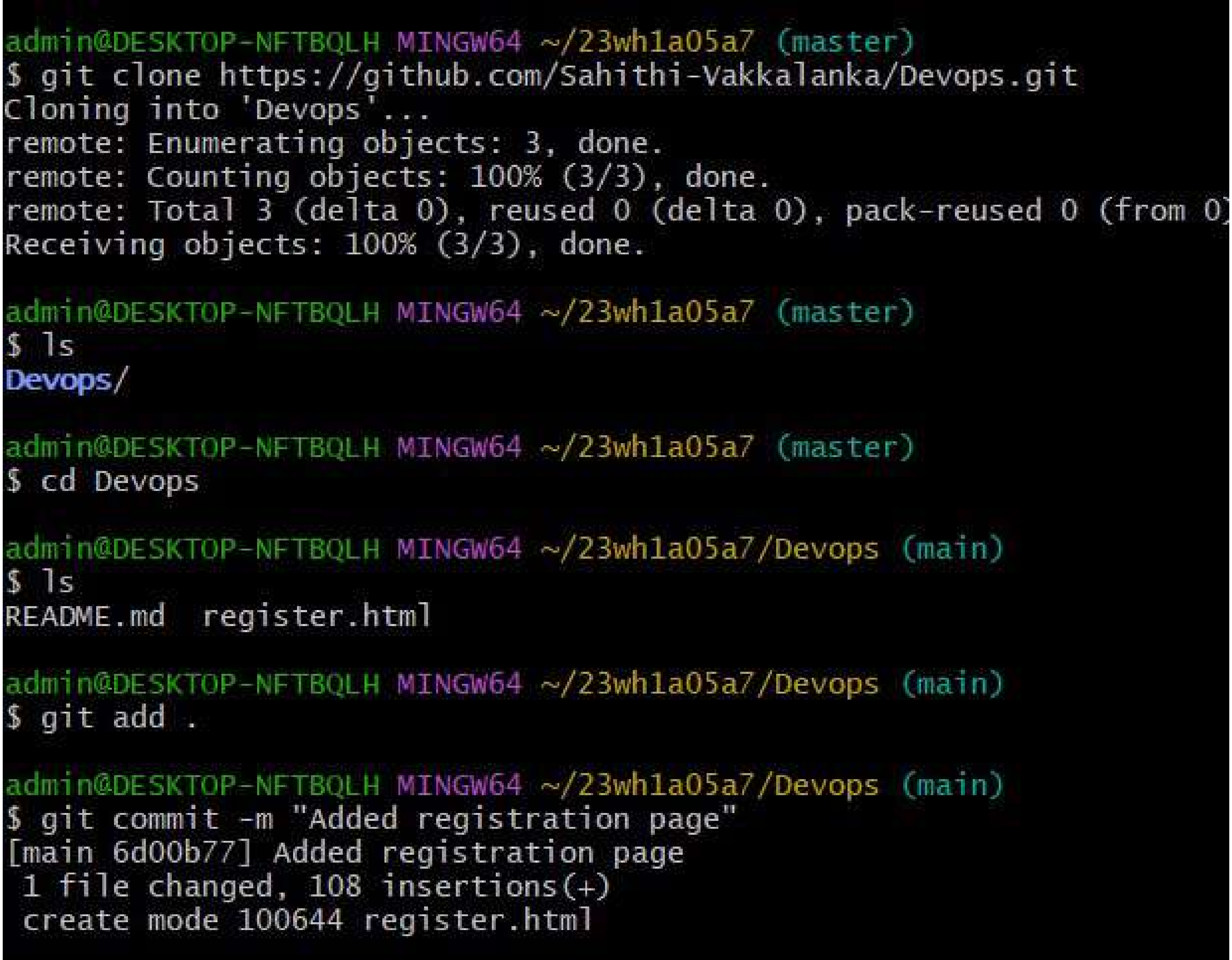
git push

The command git push is used to transfer the commits or pushing the content from the local repository to the remote repository.
The command is used after a local repository has been modified, and the modifications are to be shared with the remote team members.

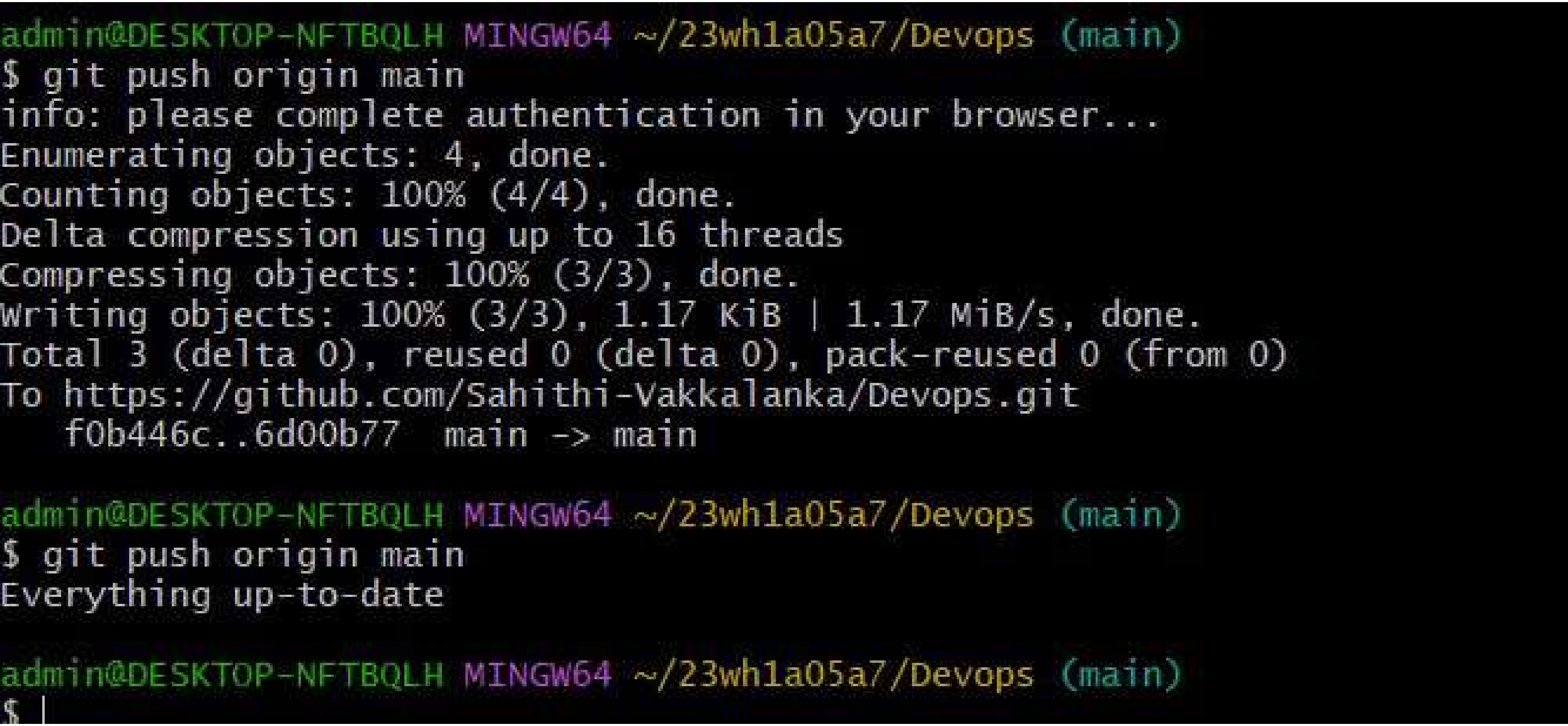
```
git push -u origin master
```



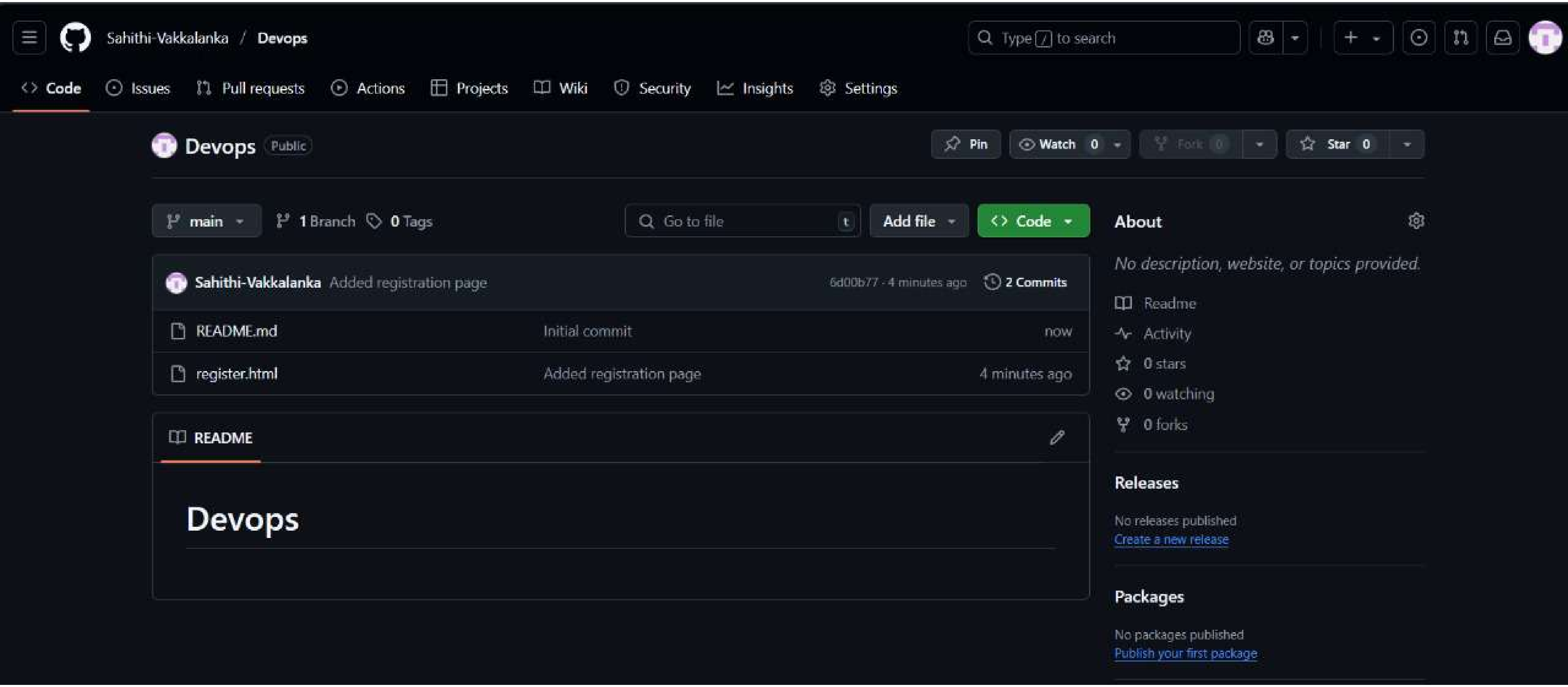
```
admin@DESKTOP-NFTBQLH MINGW64 ~ (master)
$ git config --global user.name "Sahithi-Vakkalanka"

admin@DESKTOP-NFTBQLH MINGW64 ~ (master)
$ git config --global user.email 23wh1a05a7@bvrithyderabad.edu.in

admin@DESKTOP-NFTBQLH MINGW64 ~ (master)
$ mkdir 23wh1a05a7

admin@DESKTOP-NFTBQLH MINGW64 ~ (master)
$ cd 23wh1a05a7
```



```
admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7 (master)
$ git clone https://github.com/Sahithi-Vakkalanka/Devops.git
Cloning into 'Devops'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.

admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7 (master)
$ ls
Devops/

admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7 (master)
$ cd Devops

admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7/Devops (main)
$ ls
README.md  register.html

admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7/Devops (main)
$ git add .

admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7/Devops (main)
$ git commit -m "Added registration page"
[main 6d00b77] Added registration page
 1 file changed, 108 insertions(+)
 create mode 100644 register.html
```



```
admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7/Devops (main)
$ git push origin main
info: please complete authentication in your browser...
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 16 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 1.17 KiB | 1.17 MiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Sahithi-Vakkalanka/Devops.git
   f0b446c..6d00b77  main -> main

admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7/Devops (main)
$ git push origin main
Everything up-to-date

admin@DESKTOP-NFTBQLH MINGW64 ~/23wh1a05a7/Devops (main)
$ 
```



Sahithi-Vakkalanka Added registration page 6d00b77 · 4 minutes ago 2 Commits

README.md	Initial commit	now
register.html	Added registration page	4 minutes ago

No description, website, or topics provided.

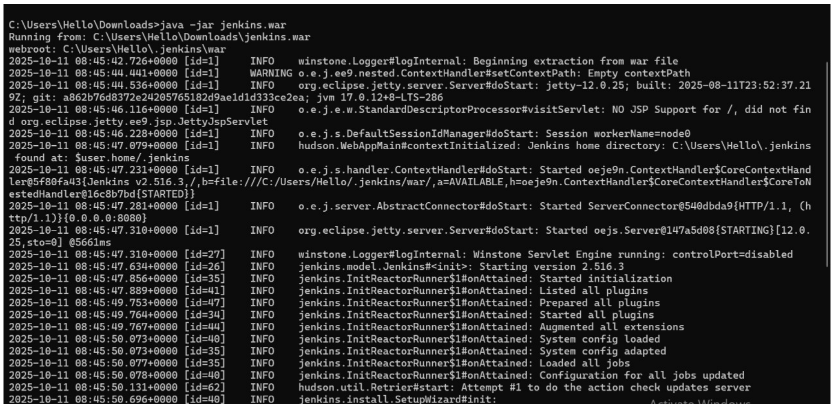
No releases published

No packages published

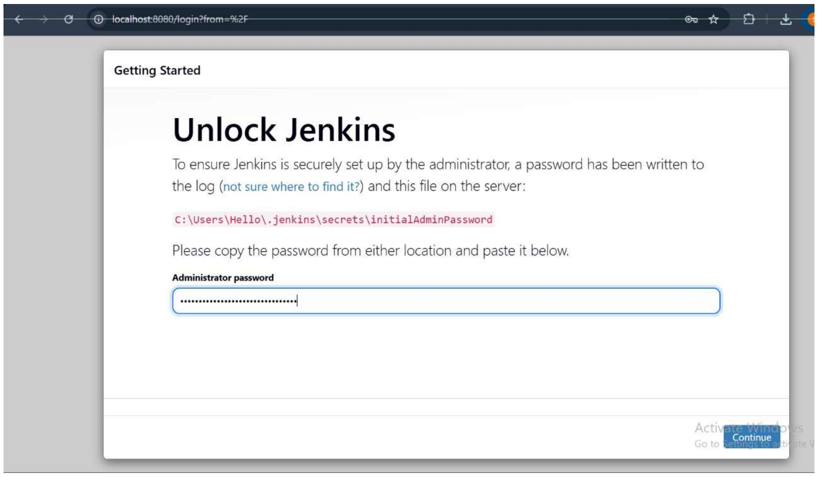
Devops

Aim: Jenkins installation and setup, explore the environment.

Output:



```
C:\Users\Hello\Downloads>java -jar jenkins.war
Running from: C:\Users\Hello\Downloads\jenkins.war
webroot: C:\Users\Hello\.jenkins\war
2025-10-11 08:45:42.726+0000 [id=1]     INFO    winstone.Logger#logInternal: Beginning extraction from war file
2025-10-11 08:45:44.441+0000 [id=1]     WARNING o.e.j.ee9.nested.ContextHandler#setContextPath: Empty contextPath
2025-10-11 08:45:44.536+0000 [id=1]     INFO    org.eclipse.jetty.server.Server#doStart: jetty-12.0.25; built: 2025-08-11T23:52:37.21
9Z; git: a862b76d8372e24205765182d9ae1d1d333ce2ea; jvm 17.0.12+8-LTS-286
2025-10-11 08:45:46.116+0000 [id=1]     INFO    o.e.j.e.w.StandardDescriptorProcessor#visitServlet: NO JSP Support for /, did not fin
d org.eclipse.jetty.ee9.jsp.JettyJspServlet
2025-10-11 08:45:46.228+0000 [id=1]     INFO    o.e.j.s.DefaultSessionIdManager#doStart: Session workerName=node0
2025-10-11 08:45:47.079+0000 [id=1]     INFO    hudson.WebAppMain#contextInitialized: Jenkins home directory: C:\Users\Hello\.jenkins
 found at: $user.home/.jenkins
2025-10-11 08:45:47.231+0000 [id=1]     INFO    o.e.j.s.handler.ContextHandler#doStart: Started oeje9n.ContextHandler$CoreContextHand
ler@5f80fa43{Jenkins v2.516.3,/,b=file:///C:/Users/Hello/.jenkins/war/,a=AVAILABLE,h=oeje9n.ContextHandler$CoreContextHandler$CoreToN
estedHandler@16c8b7bd{STARTED}}
2025-10-11 08:45:47.281+0000 [id=1]     INFO    o.e.j.server.AbstractConnector#doStart: Started ServerConnector@540dbda9{HTTP/1.1, (h
ttp/1.1)}{0.0.0.0:8080}
2025-10-11 08:45:47.310+0000 [id=1]     INFO    org.eclipse.jetty.server.Server#doStart: Started oejs.Server@147a5d08{STARTING}[12.0.
25,sto=0] @5661ms
2025-10-11 08:45:47.310+0000 [id=27]    INFO    winstone.Logger#logInternal: Winstone Servlet Engine running: controlPort=disabled
2025-10-11 08:45:47.634+0000 [id=26]    INFO    jenkins.model.Jenkins#<init>: Starting version 2.516.3
2025-10-11 08:45:47.856+0000 [id=35]    INFO    jenkins.InitReactorRunner$1#onAttained: Started initialization
2025-10-11 08:45:47.889+0000 [id=41]    INFO    jenkins.InitReactorRunner$1#onAttained: Listed all plugins
2025-10-11 08:45:49.753+0000 [id=47]    INFO    jenkins.InitReactorRunner$1#onAttained: Prepared all plugins
2025-10-11 08:45:49.764+0000 [id=34]    INFO    jenkins.InitReactorRunner$1#onAttained: Started all plugins
2025-10-11 08:45:49.767+0000 [id=44]    INFO    jenkins.InitReactorRunner$1#onAttained: Augmented all extensions
2025-10-11 08:45:50.073+0000 [id=40]    INFO    jenkins.InitReactorRunner$1#onAttained: System config loaded
2025-10-11 08:45:50.073+0000 [id=35]    INFO    jenkins.InitReactorRunner$1#onAttained: System config adapted
2025-10-11 08:45:50.077+0000 [id=35]    INFO    jenkins.InitReactorRunner$1#onAttained: Loaded all jobs
2025-10-11 08:45:50.078+0000 [id=40]    INFO    jenkins.InitReactorRunner$1#onAttained: Configuration for all jobs updated
2025-10-11 08:45:50.131+0000 [id=62]    INFO    hudson.util.Retrier#start: Attempt #1 to do the action check updates server
2025-10-11 08:45:50.696+0000 [id=40]    INFO    jenkins.install.SetupWizard#init:
```



Getting Started

Unlock Jenkins

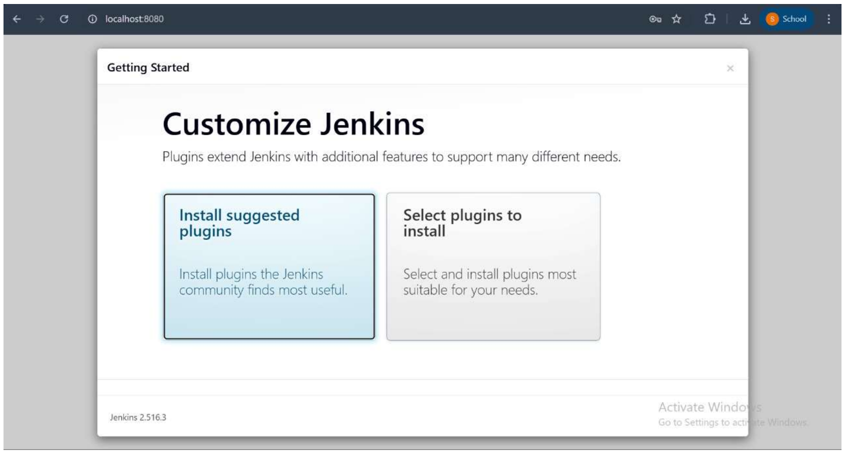
To ensure Jenkins is securely set up by the administrator, a password has been written to the log (not sure where to find it?) and this file on the server:

`C:\Users\Hello\.jenkins\secrets\initialAdminPassword`

Please copy the password from either location and paste it below.

Administrator password

••••••••••••••••••••••••••••••••



Getting Started

Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

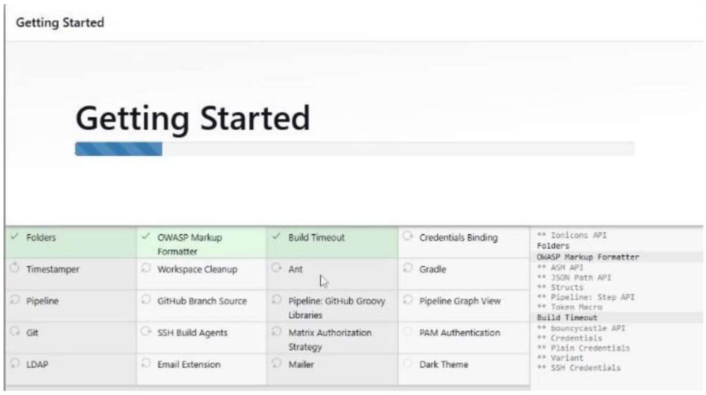
Install suggested plugins

Install plugins the Jenkins community finds most useful.

Select plugins to install

Select and install plugins most suitable for your needs.

Jenkins 2.516.3

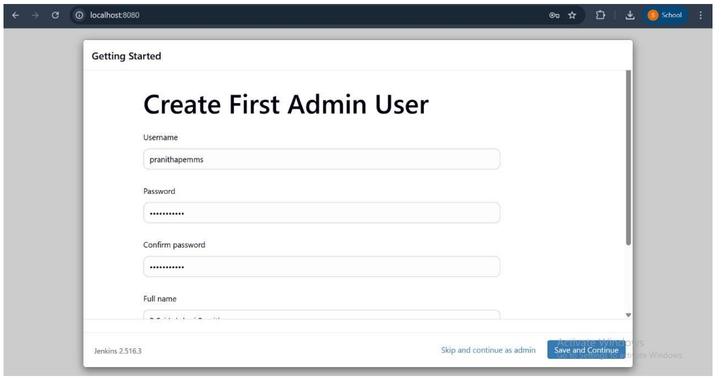


Getting Started

Getting Started

✓ Folders	✓ OWASP Markup Formatter	✓ Build Timeout	Credentials Binding	
Timestamper	Workspace Cleanup	Ant	Gradle	
Pipeline	GitHub Branch Source	Pipeline: GitHub Groovy Libraries	Pipeline Graph View	
Git	SSH Build Agents	Matrix Authorization Strategy	PAM Authentication	
LDAP	Email Extension	Mailer	Dark Theme	

```
** Ionicons API
Folders
OWASP Markup Formatter
** ASM API
** JSON Path API
** Structs
** Pipeline: Step API
** Token Macro
Build Timeout
** bouncycastle API
** Credentials
** Plain Credentials
** Variant
** SSH Credentials
```



Getting Started

Create First Admin User

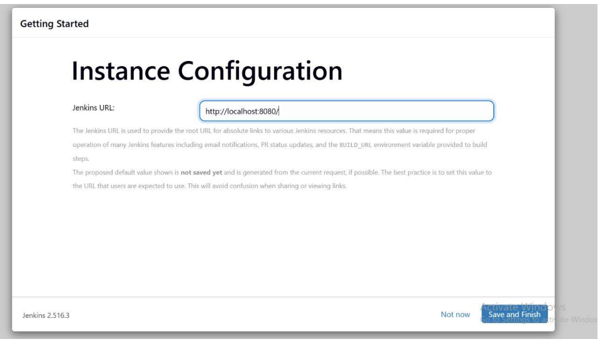
Username: pranithapemms

Password: ••••••••••••

Confirm password: ••••••••••••

Full name

Jenkins 2.516.3



Getting Started

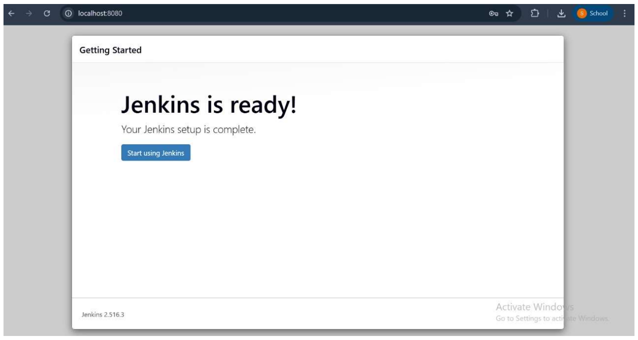
Instance Configuration

Jenkins URL: http://localhost:8080/

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the `BUILD_URL` environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Jenkins 2.516.3

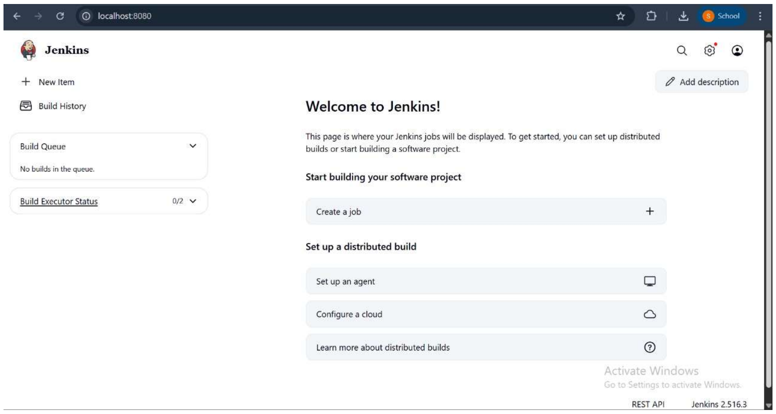


Getting Started

Jenkins is ready!

Your Jenkins setup is complete.

Jenkins 2.516.3



Build Queue

No builds in the queue.

Build Executor Status 0/2

Welcome to Jenkins!

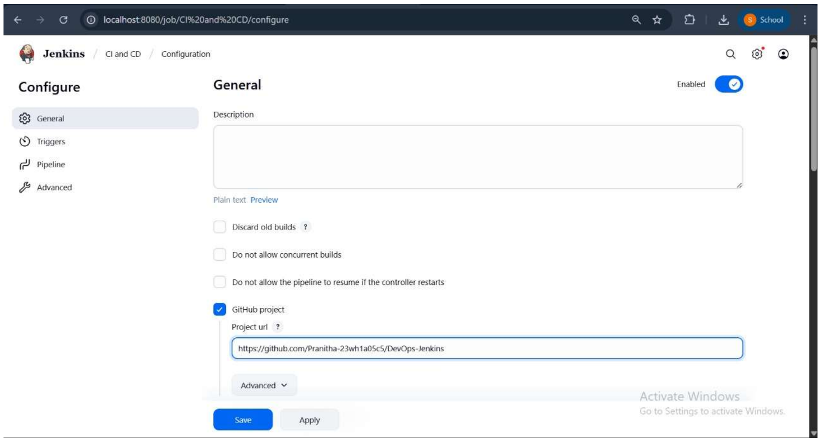
This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

Set up a distributed build

Aim: Demonstrate continuous integration and development using Jenkins.

Output:



localhost:8080/job/CI%20and%20CD/configure

Jenkins / CI and CD / Configuration

Configure

General

Enabled

Description

Plain text Preview

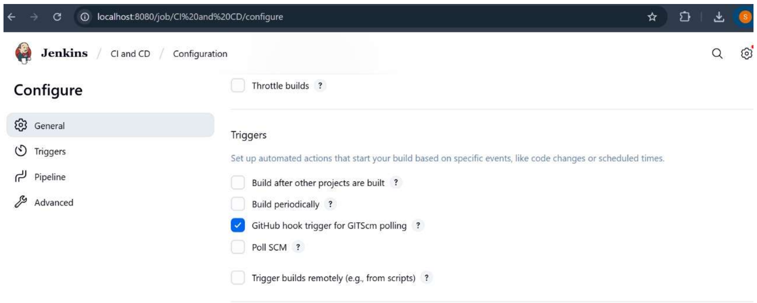
□ Discard old builds

□ Do not allow concurrent builds

□ Do not allow the pipeline to resume if the controller restarts

☑ GitHub project

Project url: https://github.com/Pranitha-23wh1a05c5/DevOps-Jenkins



localhost:8080/job/CI%20and%20CD/configure

Jenkins / CI and CD / Configuration

Configure

□ Throttle builds

Triggers

Set up automated actions that start your build based on specific events, like code changes or scheduled times.

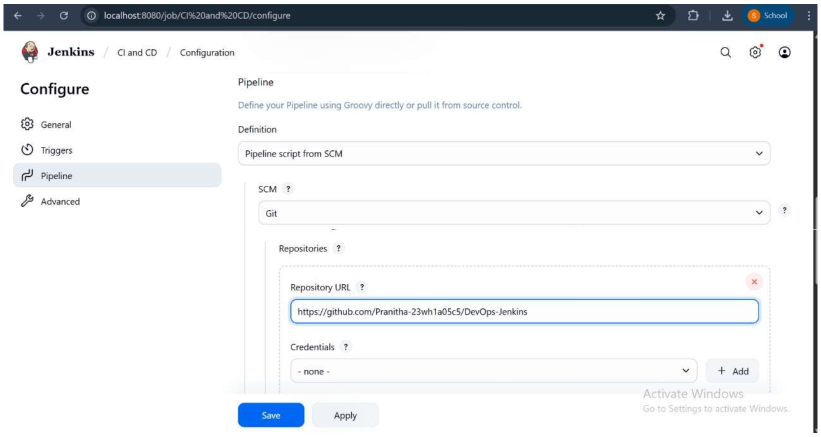
□ Build after other projects are built

□ Build periodically

☑ GitHub hook trigger for GITScm polling

□ Poll SCM

□ Trigger builds remotely (e.g., from scripts)



localhost:8080/job/CI%20and%20CD/configure

Jenkins / CI and CD / Configuration

Configure

Pipeline

Define your Pipeline using Groovy directly or pull it from source control.

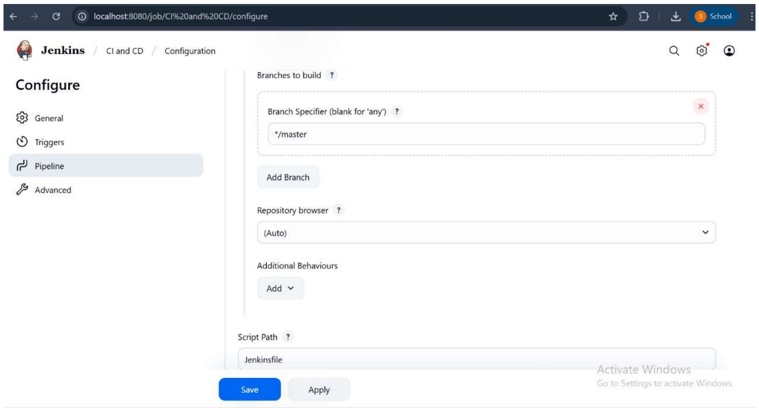
Definition: Pipeline script from SCM

SCM: Git

Repositories

Repository URL: https://github.com/Pranitha-23wh1a05c5/DevOps-Jenkins

Credentials: - none -



localhost:8080/job/CI%20and%20CD/configure

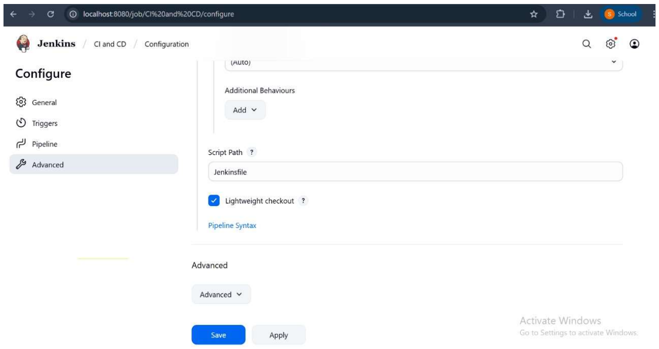
Branches to build

Branch Specifier (blank for 'any'): */master

Repository browser: (Auto)

Additional Behaviours

Script Path: Jenkinsfile



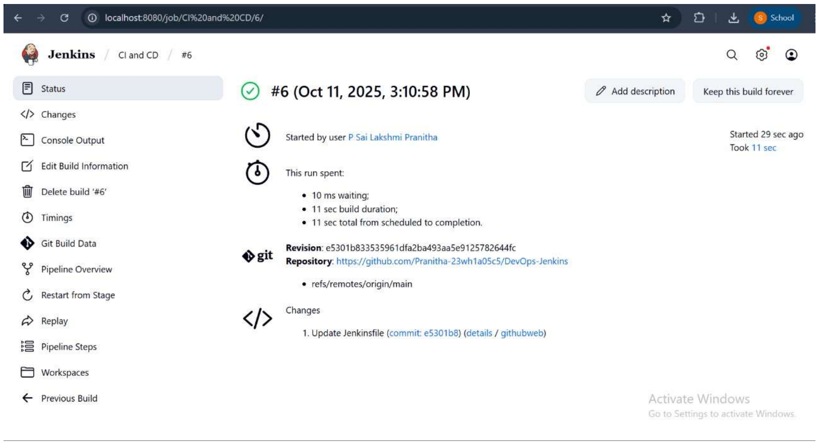
localhost:8080/job/CI%20and%20CD/configure

(Auto)

Additional Behaviours

Script Path: Jenkinsfile

☑ Lightweight checkout



localhost:8080/job/CI%20and%20CD/6/

#6 (Oct 11, 2025, 3:10:58 PM)

Started by user P Sai Lakshmi Pranitha

Started 29 sec ago
Took 11 sec

This run spent:

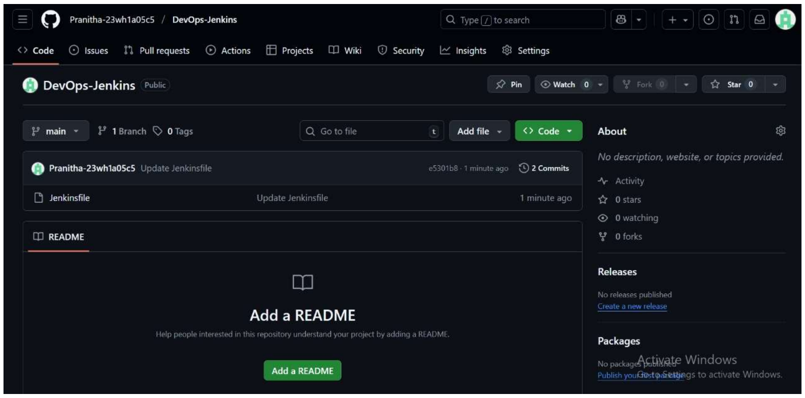
- 10 ms waiting;
- 11 sec build duration;
- 11 sec total from scheduled to completion.

Revision: e5301b833535961dfa2ba493aa5e9125782644fc
Repository: https://github.com/Pranitha-23wh1a05c5/DevOps-Jenkins

- refs/remotes/origin/main

Changes

1. Update Jenkinsfile (commit: e5301b8) (details / githubweb)



Pranitha-23wh1a05c5 Update Jenkinsfile	e5301b8 · 1 minute ago	2 Commits
Jenkinsfile	Update Jenkinsfile	1 minute ago

README

Add a README

Help people interested in this repository understand your project by adding a README.

About

No description, website, or topics provided.

Activity
0 stars
0 watching
0 forks

Releases

No releases published
Create a new release

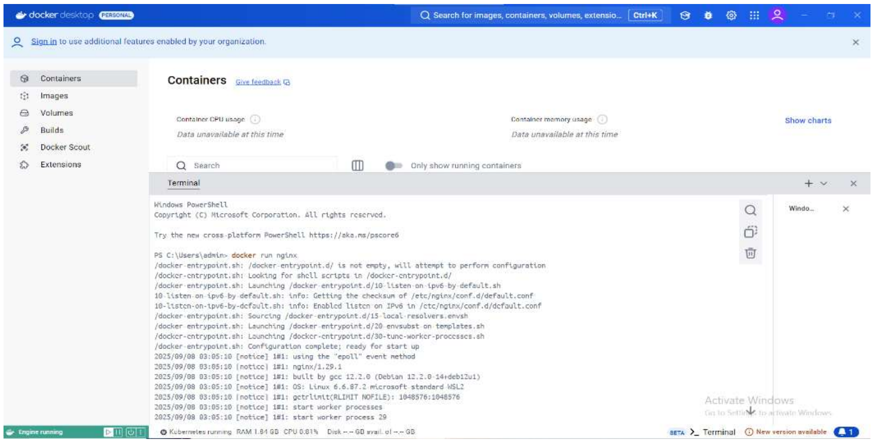
Packages

No packages published
Publish your first package

Aim: To explore Docker commands for content management.

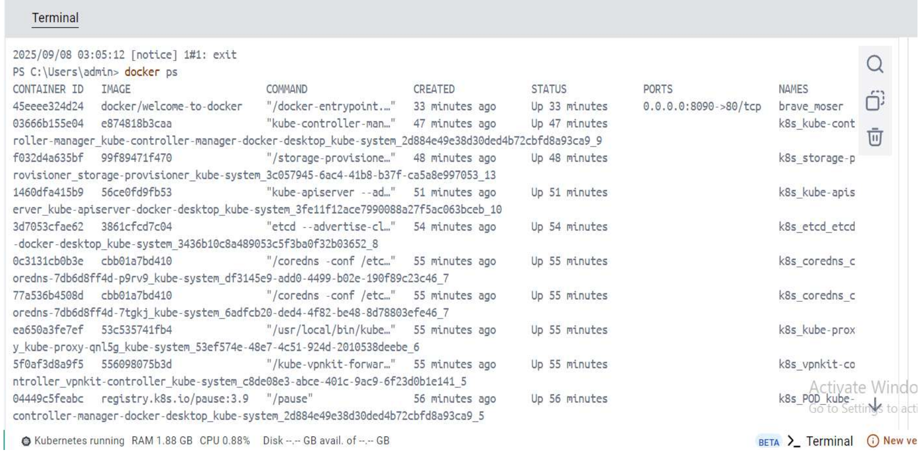
Output:

Docker is an open-source platform that uses containers to package and run applications consistently across different environments.


docker desktop PERSONAL
Search for images, containers, volumes, extensio... Ctrl+K
Sign in to use additional features enabled by your organization.
Containers
Images
Volumes
Builds
Docker Scout
Extensions
Containers Give feedback
Container CPU usage
Data unavailable at this time
Container memory usage
Data unavailable at this time
Show charts
Search
Only show running containers
Terminal
Windo...
Engine running
Kubernetes running RAM 1.84 GB CPU 0.81% Disk --.-- GB avail. of --.-- GB
BETA Terminal
New version available
Activate Windows
Go to Settings to activate Windows.

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\admin> docker run nginx
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2025/09/08 03:05:10 [notice] 1#1: using the "epoll" event method
2025/09/08 03:05:10 [notice] 1#1: nginx/1.29.1
2025/09/08 03:05:10 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14+deb12u1)
2025/09/08 03:05:10 [notice] 1#1: OS: Linux 6.6.87.2-microsoft-standard-WSL2
2025/09/08 03:05:10 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2025/09/08 03:05:10 [notice] 1#1: start worker processes
2025/09/08 03:05:10 [notice] 1#1: start worker process 29
```

docker run nginx is used to start a container running the Nginx web server from the official Nginx image.


Terminal
Kubernetes running RAM 1.88 GB CPU 0.88% Disk --.-- GB avail. of --.-- GB
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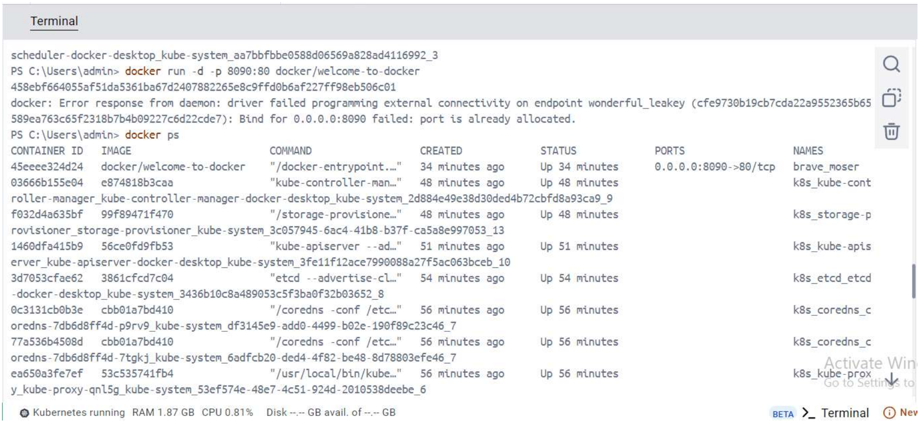
```
2025/09/08 03:05:12 [notice] 1#1: exit
PS C:\Users\admin> docker ps
CONTAINER ID   IMAGE                      COMMAND                  CREATED          STATUS          PORTS                    NAMES
45eeee324d24   docker/welcome-to-docker   "/docker-entrypoint.…"   33 minutes ago   Up 33 minutes   0.0.0.0:8090->80/tcp     brave_moser
03666b155e04   e874818b3caa               "kube-controller-man…"   47 minutes ago   Up 47 minutes                            k8s_kube-cont
roller-manager_kube-controller-manager-docker-desktop_kube-system_2d884e49e38d30ded4b72cbfd8a93ca9_9
f032d4a635bf   99f89471f470               "/storage-provisione…"   48 minutes ago   Up 48 minutes                            k8s_storage-p
rovisioner_storage-provisioner_kube-system_3c057945-6ac4-41b8-b37f-ca5a8e997053_13
1460dfa415b9   56ce0fd9fb53               "kube-apiserver --ad…"   51 minutes ago   Up 51 minutes                            k8s_kube-apis
erver_kube-apiserver-docker-desktop_kube-system_3fe11f12ace7990088a27f5ac063bceb_10
3d7053cfae62   3861cfcd7c04               "etcd --advertise-cl…"   54 minutes ago   Up 54 minutes                            k8s_etcd_etcd
-docker-desktop_kube-system_3436b10c8a489053c5f3ba0f32b03652_8
0c3131cb0b3e   cbb01a7bd410               "/coredns -conf /etc…"   55 minutes ago   Up 55 minutes                            k8s_coredns_c
oredns-7db6d8ff4d-p9rv9_kube-system_df3145e9-add0-4499-b02e-190f89c23c46_7
77a536b4508d   cbb01a7bd410               "/coredns -conf /etc…"   55 minutes ago   Up 55 minutes                            k8s_coredns_c
oredns-7db6d8ff4d-7tgkj_kube-system_6adfcb20-ded4-4f82-be48-8d78803efe46_7
ea650a3fe7ef   53c535741fb4               "/usr/local/bin/kube…"   55 minutes ago   Up 55 minutes                            k8s_kube-prox
y_kube-proxy-qnl5g_kube-system_53ef574e-48e7-4c51-924d-2010538deebe_6
5f0af3d8a9f5   556098075b3d               "/kube-vpnkit-forwar…"   55 minutes ago   Up 55 minutes                            k8s_vpnkit-co
ntroller_vpnkit-controller_kube-system_c8de08e3-abce-401c-9ac9-6f23d0b1e141_5
04449c5feabc   registry.k8s.io/pause:3.9  "/pause"                 56 minutes ago   Up 56 minutes                            k8s_POD_kube-
controller-manager-docker-desktop_kube-system_2d884e49e38d30ded4b72cbfd8a93ca9_5
```

docker ps is used to list all the running containers with details like container ID, image, status, and ports.


Terminal
Kubernetes running RAM 1.87 GB CPU 0.81% Disk --.-- GB avail. of --.-- GB
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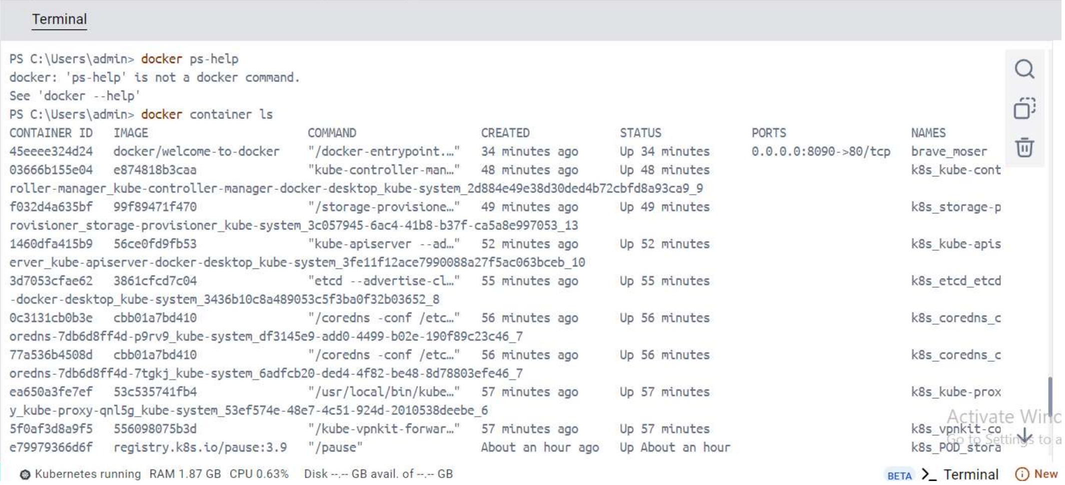
```
scheduler-docker-desktop_kube-system_aa7bbfbbe0588d06569a828ad4116992_3
PS C:\Users\admin> docker run -d -p 8090:80 docker/welcome-to-docker
458ebf664055af51da5361ba67d2407882265e8c9ffd0b6af227ff98eb506c01
docker: Error response from daemon: driver failed programming external connectivity on endpoint wonderful_leakey (cfe9730b19cb7cda22a9552365b65
589ea763c65f2318b7b4b09227c6d22cde7): Bind for 0.0.0.0:8090 failed: port is already allocated.
PS C:\Users\admin> docker ps
CONTAINER ID   IMAGE                      COMMAND                  CREATED          STATUS          PORTS                    NAMES
45eeee324d24   docker/welcome-to-docker   "/docker-entrypoint.…"   34 minutes ago   Up 34 minutes   0.0.0.0:8090->80/tcp     brave_moser
03666b155e04   e874818b3caa               "kube-controller-man…"   48 minutes ago   Up 48 minutes                            k8s_kube-cont
roller-manager_kube-controller-manager-docker-desktop_kube-system_2d884e49e38d30ded4b72cbfd8a93ca9_9
f032d4a635bf   99f89471f470               "/storage-provisione…"   48 minutes ago   Up 48 minutes                            k8s_storage-p
rovisioner_storage-provisioner_kube-system_3c057945-6ac4-41b8-b37f-ca5a8e997053_13
1460dfa415b9   56ce0fd9fb53               "kube-apiserver --ad…"   51 minutes ago   Up 51 minutes                            k8s_kube-apis
erver_kube-apiserver-docker-desktop_kube-system_3fe11f12ace7990088a27f5ac063bceb_10
3d7053cfae62   3861cfcd7c04               "etcd --advertise-cl…"   54 minutes ago   Up 54 minutes                            k8s_etcd_etcd
-docker-desktop_kube-system_3436b10c8a489053c5f3ba0f32b03652_8
0c3131cb0b3e   cbb01a7bd410               "/coredns -conf /etc…"   56 minutes ago   Up 56 minutes                            k8s_coredns_c
oredns-7db6d8ff4d-p9rv9_kube-system_df3145e9-add0-4499-b02e-190f89c23c46_7
77a536b4508d   cbb01a7bd410               "/coredns -conf /etc…"   56 minutes ago   Up 56 minutes                            k8s_coredns_c
oredns-7db6d8ff4d-7tgkj_kube-system_6adfcb20-ded4-4f82-be48-8d78803efe46_7
ea650a3fe7ef   53c535741fb4               "/usr/local/bin/kube…"   56 minutes ago   Up 56 minutes                            k8s_kube-prox
y_kube-proxy-qnl5g_kube-system_53ef574e-48e7-4c51-924d-2010538deebe_6
```

docker run -d -p 8090:80 docker/welcome-to-docker is used to run the welcome-to-docker image in the background and map port 8090 of the host to port 80 of the container.



```
PS C:\Users\admin> docker ps-help
docker: 'ps-help' is not a docker command.
See 'docker --help'
PS C:\Users\admin> docker container ls
CONTAINER ID   IMAGE                         COMMAND                  CREATED             STATUS              PORTS                  NAMES
45eeee324d24   docker/welcome-to-docker      "/docker-entrypoint.…"   34 minutes ago      Up 34 minutes       0.0.0.0:8090->80/tcp   brave_moser
03666b155e04   e874818b3caa                  "kube-controller-man…"   48 minutes ago      Up 48 minutes                              k8s_kube-cont
roller-manager_kube-controller-manager-docker-desktop_kube-system_2d884e49e38d30ded4b72cbfd8a93ca9_9
f032d4a635bf   99f89471f470                  "/storage-provisione…"   49 minutes ago      Up 49 minutes                              k8s_storage-p
rovisioner_storage-provisioner_kube-system_3c057945-6ac4-41b8-b37f-ca5a8e997053_13
1460dfa415b9   56ce0fd9fb53                  "kube-apiserver --ad…"   52 minutes ago      Up 52 minutes                              k8s_kube-apis
erver_kube-apiserver-docker-desktop_kube-system_3fe11f12ace7990088a27f5ac063bceb_10
3d7053cfae62   3861cfcd7c04                  "etcd --advertise-cl…"   55 minutes ago      Up 55 minutes                              k8s_etcd_etcd
-docker-desktop_kube-system_3436b10c8a489053c5f3ba0f32b03652_8
0c3131cb0b3e   cbb01a7bd410                  "/coredns -conf /etc…"   56 minutes ago      Up 56 minutes                              k8s_coredns_c
oredns-7db6d8ff4d-p9rv9_kube-system_df3145e9-add0-4499-b02e-190f89c23c46_7
77a536b4508d   cbb01a7bd410                  "/coredns -conf /etc…"   56 minutes ago      Up 56 minutes                              k8s_coredns_c
oredns-7db6d8ff4d-7tgkj_kube-system_6adfcb20-ded4-4f82-be48-8d78803efe46_7
ea650a3fe7ef   53c535741fb4                  "/usr/local/bin/kube…"   57 minutes ago      Up 57 minutes                              k8s_kube-prox
y_kube-proxy-qnl5g_kube-system_53ef574e-48e7-4c51-924d-2010538deebe_6
5f0af3d8a9f5   556098075b3d                  "/kube-vpnkit-forwar…"   57 minutes ago      Up 57 minutes                              k8s_vpnkit-co
e79979366d6f   registry.k8s.io/pause:3.9     "/pause"                 About an hour ago   Up About an hour                           k8s_POD_stora
```

Kubernetes running RAM 1.87 GB CPU 0.63% Disk --.-- GB avail. of --.-- GB
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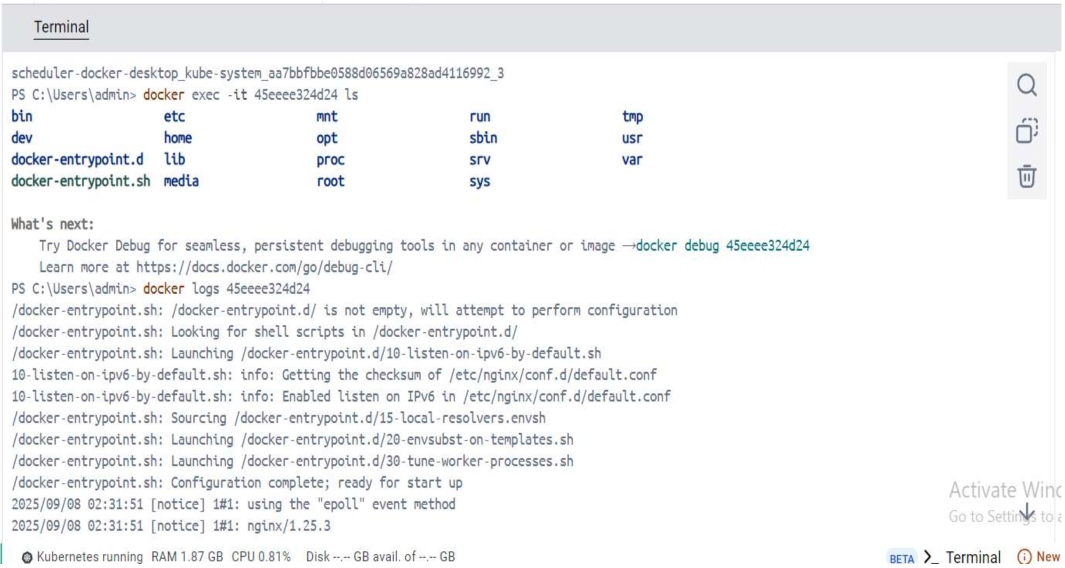
docker ps --help is used to display all the available options and usage instructions for the docker ps command.

docker container ls is used to list all the running containers with details like ID, image, status, and ports (same as docker ps).



```
scheduler-docker-desktop_kube-system_aa7bbfbbe0588d06569a828ad4116992_3
PS C:\Users\admin> docker exec -it 45eeee324d24 ls
bin                   etc                   mnt                   run                   tmp
dev                   home                  opt                   sbin                  usr
docker-entrypoint.d   lib                   proc                  srv                   var
docker-entrypoint.sh  media                 root                  sys

What's next:
    Try Docker Debug for seamless, persistent debugging tools in any container or image →docker debug 45eeee324d24
    Learn more at https://docs.docker.com/go/debug-cli/
PS C:\Users\admin> docker logs 45eeee324d24
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2025/09/08 02:31:51 [notice] 1#1: using the "epoll" event method
2025/09/08 02:31:51 [notice] 1#1: nginx/1.25.3
```

Kubernetes running RAM 1.87 GB CPU 0.81% Disk --.-- GB avail. of --.-- GB
BETA
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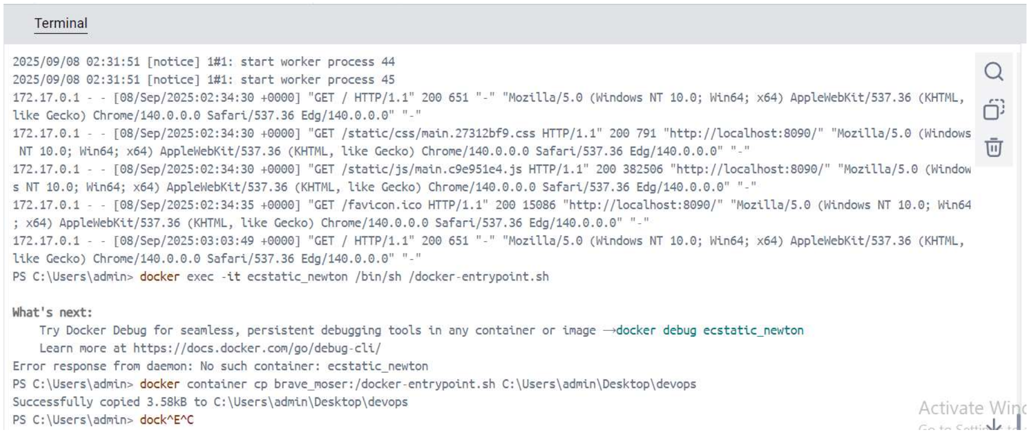
docker exec -it 45eeeee324d24 ls is used to run the ls command inside the running container with ID 45eeeee324d24, letting you list its files interactively.

docker logs 45eeeee324d24 is used to view the output or logs of the running container with ID 45eeeee324d24.

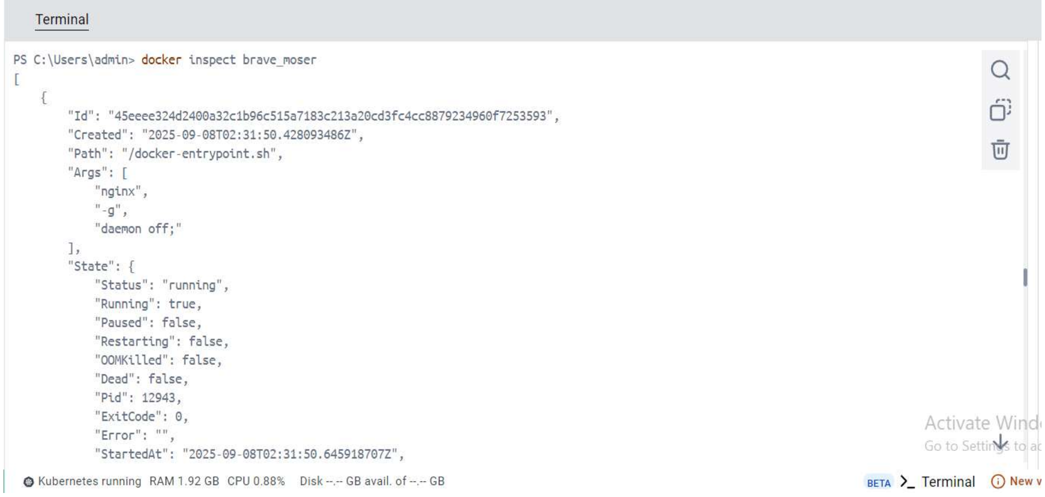


```
2025/09/08 02:31:51 [notice] 1#1: start worker process 44
2025/09/08 02:31:51 [notice] 1#1: start worker process 45
172.17.0.1 - - [08/Sep/2025:02:34:30 +0000] "GET / HTTP/1.1" 200 651 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML,
like Gecko) Chrome/140.0.0.0 Safari/537.36 Edg/140.0.0.0" "-"
172.17.0.1 - - [08/Sep/2025:02:34:30 +0000] "GET /static/css/main.27312bf9.css HTTP/1.1" 200 791 "http://localhost:8090/" "Mozilla/5.0 (Windows
 NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36 Edg/140.0.0.0" "-"
172.17.0.1 - - [08/Sep/2025:02:34:30 +0000] "GET /static/js/main.c9e951e4.js HTTP/1.1" 200 382506 "http://localhost:8090/" "Mozilla/5.0 (Window
s NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36 Edg/140.0.0.0" "-"
172.17.0.1 - - [08/Sep/2025:02:34:35 +0000] "GET /favicon.ico HTTP/1.1" 200 15086 "http://localhost:8090/" "Mozilla/5.0 (Windows NT 10.0; Win64
; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36 Edg/140.0.0.0" "-"
172.17.0.1 - - [08/Sep/2025:03:03:49 +0000] "GET / HTTP/1.1" 200 651 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML,
like Gecko) Chrome/140.0.0.0 Safari/537.36 Edg/140.0.0.0" "-"
PS C:\Users\admin> docker exec -it ecstatic_newton /bin/sh /docker-entrypoint.sh

What's next:
    Try Docker Debug for seamless, persistent debugging tools in any container or image →docker debug ecstatic_newton
    Learn more at https://docs.docker.com/go/debug-cli/
Error response from daemon: No such container: ecstatic_newton
PS C:\Users\admin> docker container cp brave_moser:/docker-entrypoint.sh C:\Users\admin\Desktop\devops
Successfully copied 3.58kB to C:\Users\admin\Desktop\devops
PS C:\Users\admin> dock^E^C
```

docker exec -it ecstatic_newton /bin/sh /docker-entrypoint.sh is used to run the /docker-entrypoint.sh script inside the running container named ecstatic_newton interactively using a shell.

docker container cp brave_moser:/docker-entrypoint.sh C:\user\admin\Desktop\devops is used to copy the file /docker-entrypoint.sh from the container brave_moser to the host path C:\user\admin\Desktop\devops.



```
PS C:\Users\admin> docker inspect brave_moser
[
    {
        "Id": "45eeee324d2400a32c1b96c515a7183c213a20cd3fc4cc8879234960f7253593",
        "Created": "2025-09-08T02:31:50.428093486Z",
        "Path": "/docker-entrypoint.sh",
        "Args": [
            "nginx",
            "-g",
            "daemon off;"
        ],
        "State": {
            "Status": "running",
            "Running": true,
            "Paused": false,
            "Restarting": false,
            "OOMKilled": false,
            "Dead": false,
            "Pid": 12943,
            "ExitCode": 0,
            "Error": "",
            "StartedAt": "2025-09-08T02:31:50.645918707Z",
```

Kubernetes running RAM 1.92 GB CPU 0.88% Disk --.-- GB avail. of --.-- GB
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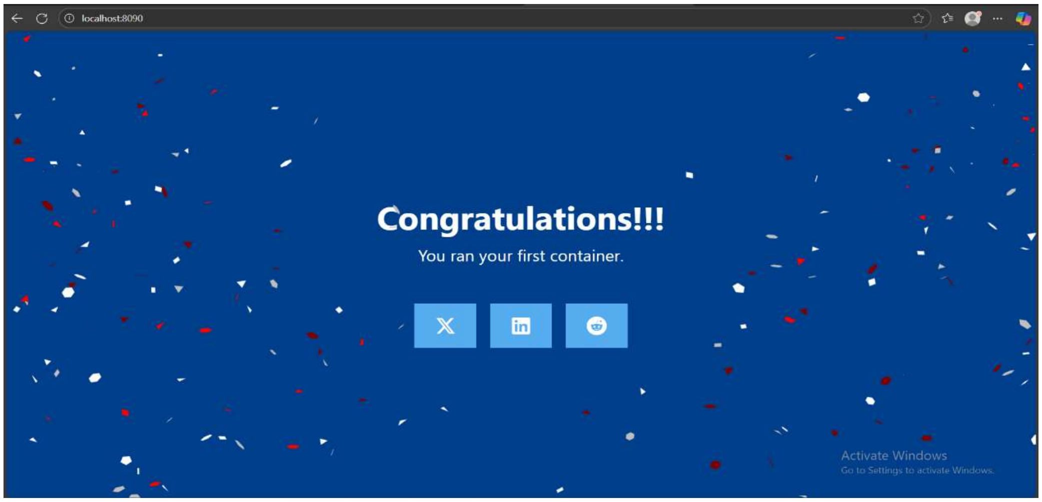
docker inspect brave_moser is used to view detailed information about the container brave_moser, such as its configuration, network settings, mounts, and state.

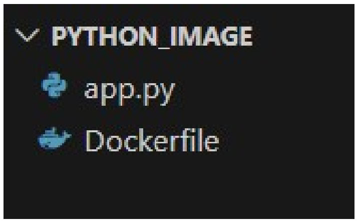


localhost:8090
Congratulations!!!
You ran your first container.
Activate Windows
Go to Settings to activate Windows.

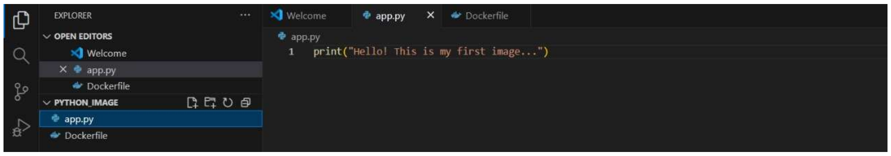
Aim: To develop a simple containerized application using Docker.

Output:

step 1: On desktop create a folder by your roll-no then another folder devops then python_image eg:571->devops->python_image
step 2: open python_image folder in vs code
step 3: create 2 files app.py and Dockerfile

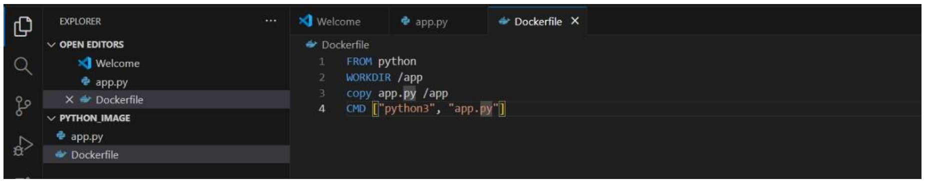


app.py



```
print("Hello! This is my first image...")
```

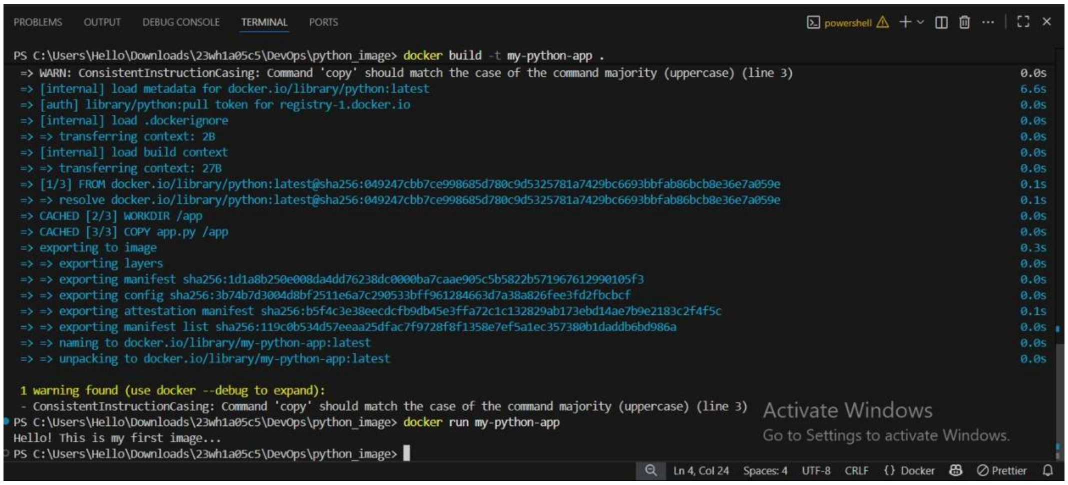
Dockerfile



```
FROM python
WORKDIR /app
copy app.py /app
CMD ["python3", "app.py"]
```

step 4:open docker desktop

step 5:open terminal and run
docker build -t my-python-app .
and
docker run my-python-app

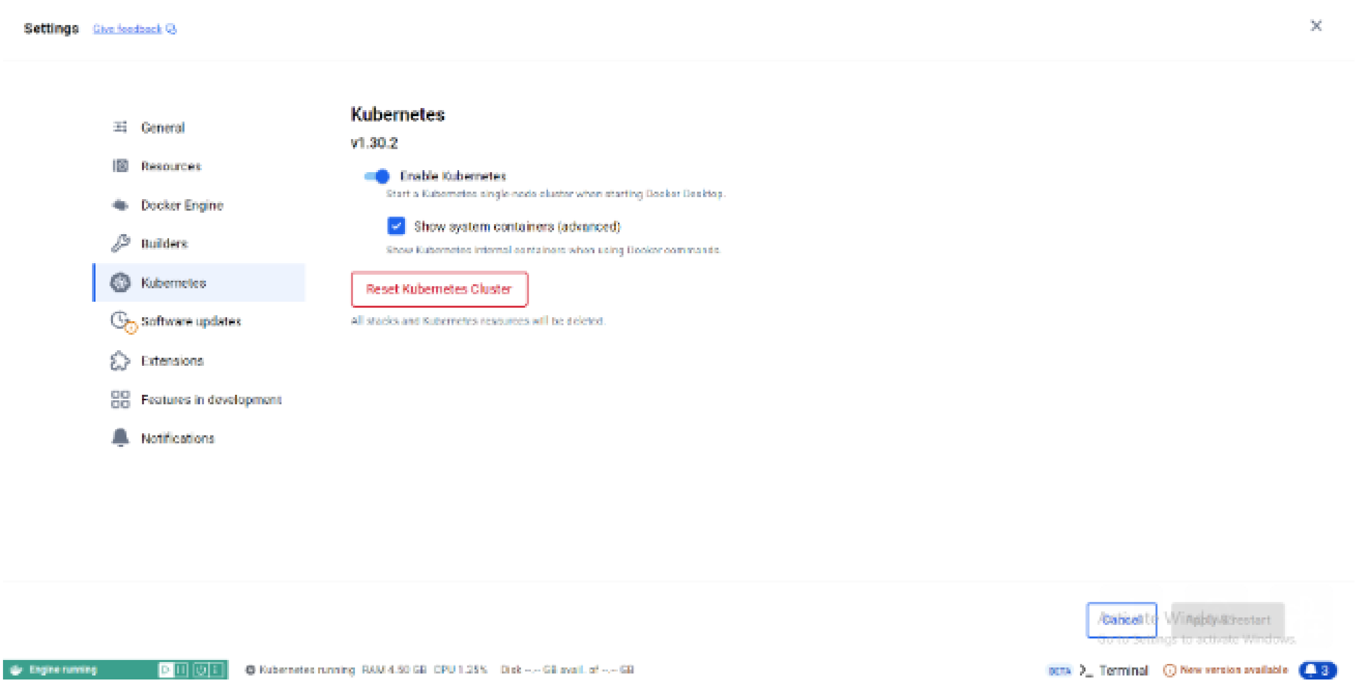


```
PS C:\Users\Hello\Downloads\23wh1a05c5\DevOps\python_image> docker build -t my-python-app .
 => WARN: ConsistentInstructionCasing: Command 'copy' should match the case of the command majority (uppercase) (line 3)      0.0s
 => [internal] load metadata for docker.io/library/python:latest                                                              6.6s
 => [auth] library/python:pull token for registry-1.docker.io                                                                 0.0s
 => [internal] load .dockerignore                                                                                             0.0s
 => => transferring context: 2B                                                                                               0.0s
 => [internal] load build context                                                                                             0.0s
 => => transferring context: 27B                                                                                              0.0s
 => [1/3] FROM docker.io/library/python:latest@sha256:049247cbb7ce998685d780c9d5325781a7429bc6693bbfab86bcb8e36e7a059e        0.1s
 => => resolve docker.io/library/python:latest@sha256:049247cbb7ce998685d780c9d5325781a7429bc6693bbfab86bcb8e36e7a059e        0.1s
 => CACHED [2/3] WORKDIR /app                                                                                                 0.0s
 => CACHED [3/3] COPY app.py /app                                                                                             0.0s
 => exporting to image                                                                                                        0.3s
 => => exporting layers                                                                                                       0.0s
 => => exporting manifest sha256:1d1a8b250e008da4dd76238dc0000ba7caae905c5b5822b571967612990105f3                             0.0s
 => => exporting config sha256:3b74b7d3004d8bf2511e6a7c290533bff961284663d7a38a826fee3fd2fbcbcf                               0.0s
 => => exporting attestation manifest sha256:b5f4c3e38eecdcfb9db45e3ffa72c1c132829ab173ebd14ae7b9e2183c2f4f5c                 0.1s
 => => exporting manifest list sha256:119c0b534d57eeaa25dfac7f9728f8f1358e7ef5a1ec357380b1daddb6bd986a                        0.0s
 => => naming to docker.io/library/my-python-app:latest                                                                       0.0s
 => => unpacking to docker.io/library/my-python-app:latest                                                                    0.0s

 1 warning found (use docker --debug to expand):
 - ConsistentInstructionCasing: Command 'copy' should match the case of the command majority (uppercase) (line 3)
PS C:\Users\Hello\Downloads\23wh1a05c5\DevOps\python_image> docker run my-python-app
Hello! This is my first image...
PS C:\Users\Hello\Downloads\23wh1a05c5\DevOps\python_image> 
```

step 1: open docker desktop

step 2: open settings in docker

step 3: go to kubernetes



Kubernetes

v1.30.2

● Enable Kubernetes

Start a Kubernetes single-node cluster when starting Docker Desktop.

☑ Show system containers (advanced)

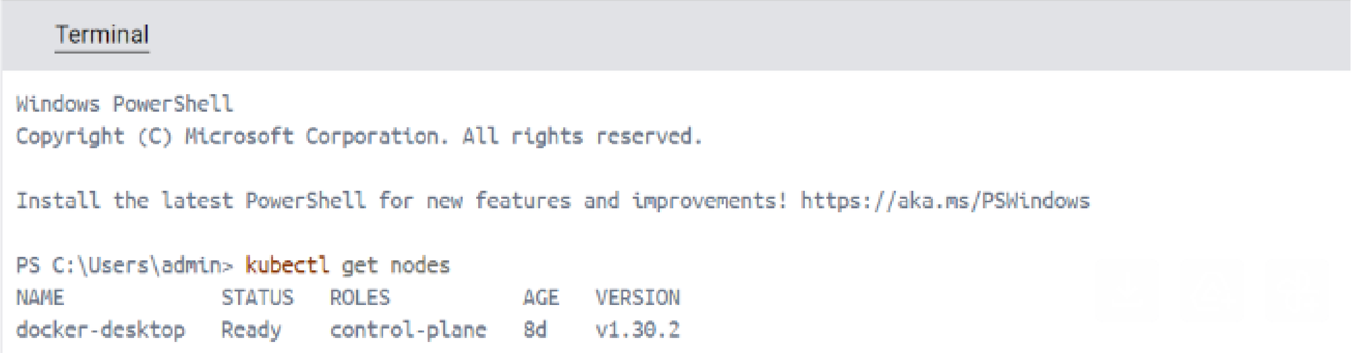
Show Kubernetes internal containers when using Docker commands.

Reset Kubernetes Cluster

All stacks and Kubernetes resources will be deleted.

step 4: open terminal in docker and keep the following command

kubectl get nodes



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\admin> kubectl get nodes
NAME             STATUS   ROLES           AGE   VERSION
docker-desktop   Ready    control-plane   8d    v1.30.2
```

9. Automate the process of running containerized applications for exercise 7 using Kubernetes.

Step 1: Create Kubernetes Deployment file (deployment.yaml)

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: python-deployment
spec:
  replicas: 1
  selector:
    matchLabels:
      app: my-python-app
  template:
    metadata:
      labels:
        app: my-python-app
    spec:
      containers:
        - name: my-python-app
          image: my-python-app:latest
          imagePullPolicy: Never
          ports:
            - containerPort: 80
```

Step 2: Create Kubernetes Service file (service.yaml):

```
apiVersion: v1
kind: Service
metadata:
  name: python-service
spec:
  selector:
    app: my-python-app
  ports:
    - protocol: TCP
```

```
      port: 80
      targetPort: 80
  type: NodePort
```

Step 3: Apply Kubernetes configuration

In terminal (inside project folder):

```
kubectl apply -f deployment.yaml
kubectl apply -f service.yaml
```

Output :

```
deployment.apps/python-deployment created
service/python-service created
```

Step 4: Verify Deployment and Pods

```
kubectl get pods
```

Output:

```
NAME                                 READY   STATUS    RESTARTS   AGE
python-deployment-6cfd45b57f-pqxrq   1/1     Running   0          10s
```

Check the logs:

```
kubectl logs python-deployment-6cfd45b57f-pqxrq
```

Output:

This is my first image

Step 5: Expose and Access the Application

Check the NodePort assigned:

```
kubectl get service python-service
```

Output:

```
NAME             TYPE       CLUSTER-IP     EXTERNAL-IP   PORT(S)        AGE
python-service   NodePort   10.100.200.1   <none>        80:30743/TCP   12s
```

Open browser and visit:

http://localhost:30743

<u>Aim:</u> To install and Explore Karate and Spring boot testing for automated testing.

Install Karate

1. Prerequisites

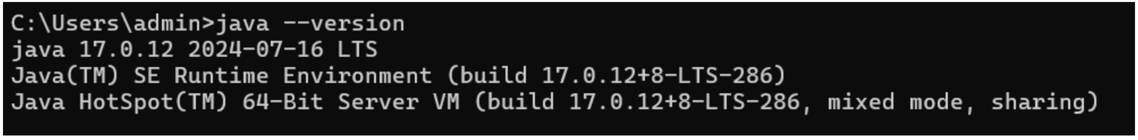
Before installing Karate, make sure these are set up:

Tool	Required	Command to Verify	Expected Output Example
Java JDK 17+	Yes	Java --version	java version "17.0.11"
Apache Maven	Yes	Mvn --version	Apache Maven 3.9.6

2. Verify Java

Open Command Prompt (cmd) or PowerShell, and run:

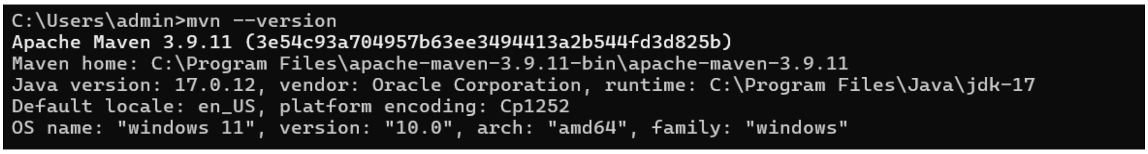
java -version



```
C:\Users\admin>java --version
java 17.0.12 2024-07-16 LTS
Java(TM) SE Runtime Environment (build 17.0.12+8-LTS-286)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.12+8-LTS-286, mixed mode, sharing)
```

3. Verify Maven

mvn -version



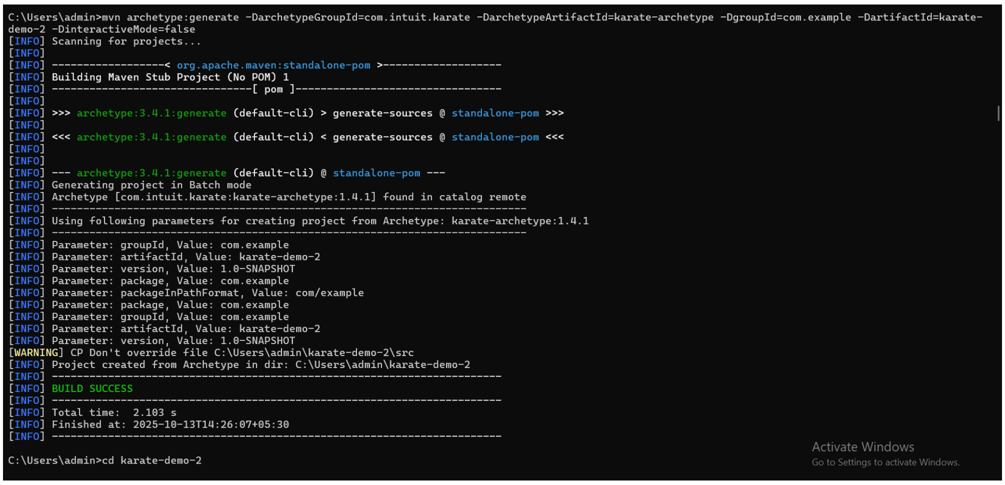
```
C:\Users\admin>mvn --version
Apache Maven 3.9.11 (3e54c93a704957b63ee3494413a2b544fd3d825b)
Maven home: C:\Program Files\apache-maven-3.9.11-bin\apache-maven-3.9.11
Java version: 17.0.12, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk-17
Default locale: en_US, platform encoding: Cp1252
OS name: "windows 11", version: "10.0", arch: "amd64", family: "windows"
```

4. Create a New Karate Project

You can create a Karate project quickly using Maven.

Run this in your terminal:

```
mvn archetype:generate \
  -DarchetypeGroupId=com.intuit.karate \
  -DarchetypeArtifactId=karate-archetype \
  -DarchetypeVersion=1.5.0 \
  -DgroupId=com.example \
  -DartifactId=karate-demo \
  -DinteractiveMode=false
```



```
C:\Users\admin>mvn archetype:generate -DarchetypeGroupId=com.intuit.karate -DarchetypeArtifactId=karate-archetype -DgroupId=com.example -DartifactId=karate-
demo-2 -DinteractiveMode=false
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------< org.apache.maven:standalone-pom >-------------------
[INFO] Building Maven Stub Project (No POM) 1
[INFO] --------------------------------[ pom ]---------------------------------
[INFO]
[INFO] >>> archetype:3.4.1:generate (default-cli) > generate-sources @ standalone-pom >>>
[INFO]
[INFO] <<< archetype:3.4.1:generate (default-cli) < generate-sources @ standalone-pom <<<
[INFO]
[INFO]
[INFO] --- archetype:3.4.1:generate (default-cli) @ standalone-pom ---
[INFO] Generating project in Batch mode
[INFO] Archetype [com.intuit.karate:karate-archetype:1.4.1] found in catalog remote
[INFO] ----------------------------------------------------------------------------
[INFO] Using following parameters for creating project from Archetype: karate-archetype:1.4.1
[INFO] ----------------------------------------------------------------------------
[INFO] Parameter: groupId, Value: com.example
[INFO] Parameter: artifactId, Value: karate-demo-2
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Parameter: package, Value: com.example
[INFO] Parameter: packageInPathFormat, Value: com/example
[INFO] Parameter: package, Value: com.example
[INFO] Parameter: groupId, Value: com.example
[INFO] Parameter: artifactId, Value: karate-demo-2
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[WARNING] CP Don't override file C:\Users\admin\karate-demo-2\src
[INFO] Project created from Archetype in dir: C:\Users\admin\karate-demo-2
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  2.103 s
[INFO] Finished at: 2025-10-13T14:26:07+05:30
[INFO] ------------------------------------------------------------------------

C:\Users\admin>cd karate-demo-2
```

5. Open the Project

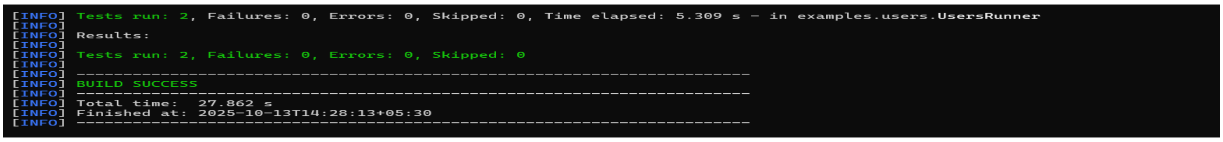
Go into the new project:

cd karate-demo

6. Run the Sample Karate Test

Run this command:

mvn test -Dtest=examples.users.UsersRunner



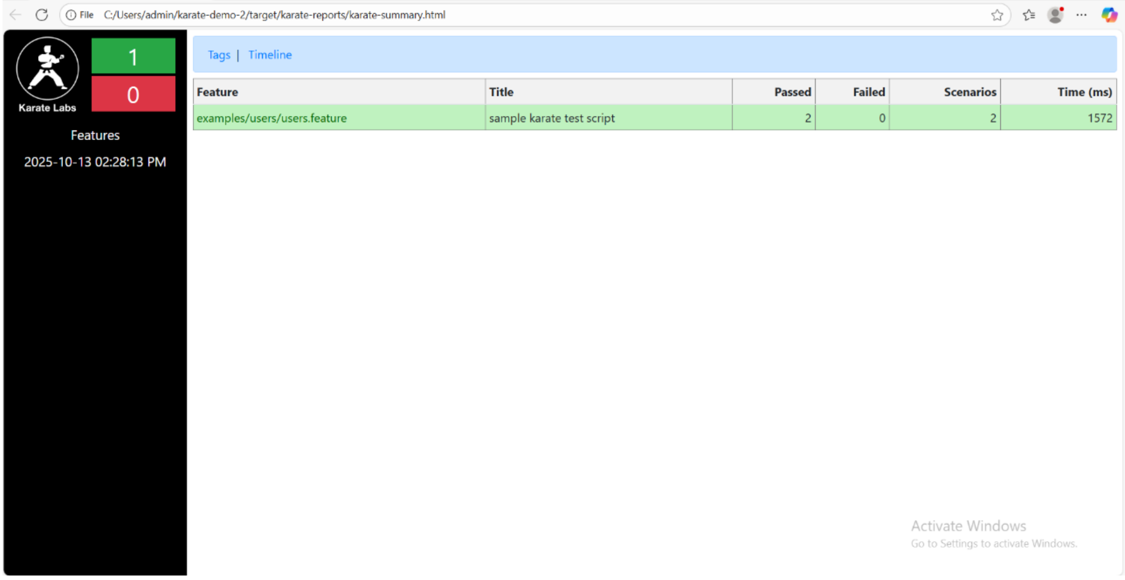
```
[INFO] Tests run: 2, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 5.309 s - in examples.users.UsersRunner
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 2, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  27.862 s
[INFO] Finished at: 2025-10-13T14:28:13+05:30
[INFO] ------------------------------------------------------------------------
```

7. View Reports

After tests, Karate automatically generates a HTML report.

Check:

target/karate-reports/karate-summary.html



File
C:/Users/admin/karate-demo-2/target/karate-reports/karate-summary.html
Karate Labs
1
0
Features
2025-10-13 02:28:13 PM
Tags | Timeline
Activate Windows
Go to Settings to activate Windows.

Feature	Title	Passed	Failed	Scenarios	Time (ms)
examples/users/users.feature	sample karate test script	2	0	2	1572

Install Spring Boot

Step 1 — Install Java (JDK 17 or higher)

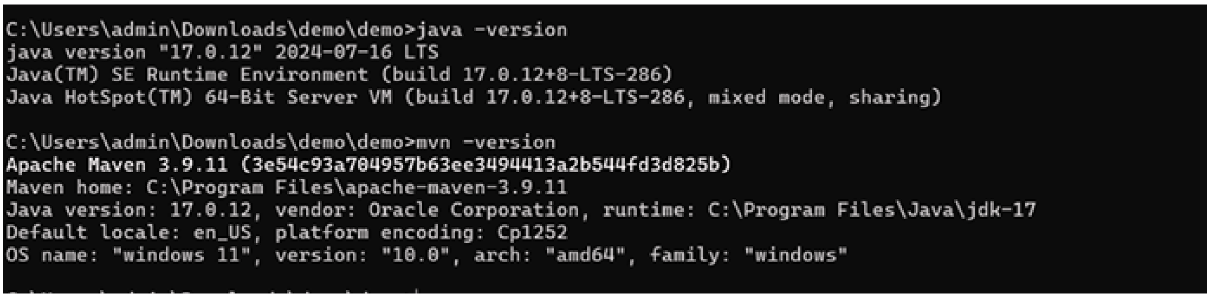
Open Command Prompt (cmd) or PowerShell and run:

java -version

Step 2 — Install Apache Maven

Check if Maven is installed

mvn -version



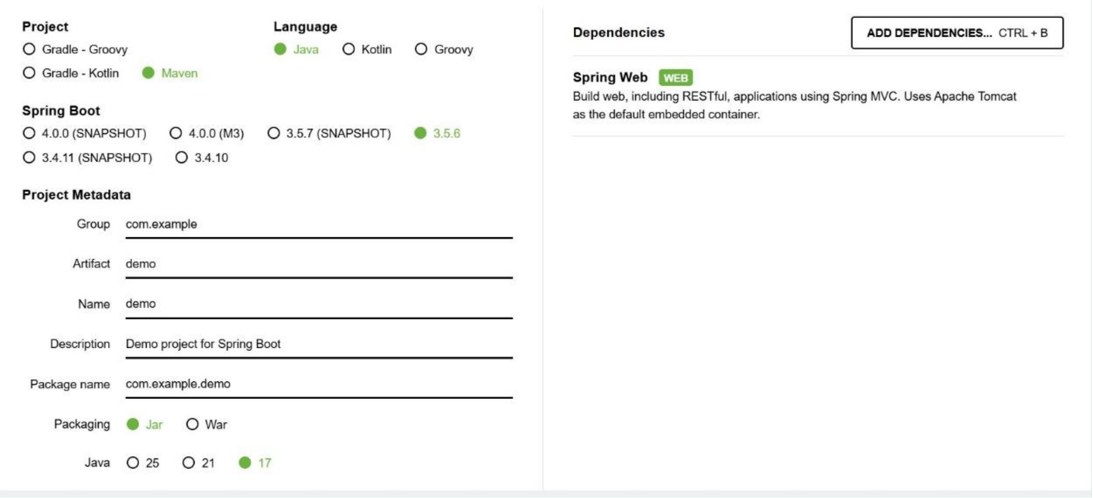
```
C:\Users\admin\Downloads\demo\demo>java -version
java version "17.0.12" 2024-07-16 LTS
Java(TM) SE Runtime Environment (build 17.0.12+8-LTS-286)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.12+8-LTS-286, mixed mode, sharing)

C:\Users\admin\Downloads\demo\demo>mvn -version
Apache Maven 3.9.11 (3e54c93a704957b63ee3494413a2b544fd3d825b)
Maven home: C:\Program Files\apache-maven-3.9.11
Java version: 17.0.12, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk-17
Default locale: en_US, platform encoding: Cp1252
OS name: "windows 11", version: "10.0", arch: "amd64", family: "windows"
```

Step 3 — Create a Spring Boot Project

Using Spring Initializr (Recommended)

1. Open your browser and go to https://start.spring.io
2. Fill the form:
   - □ Project: Maven
   - □ Language: Java
   - □ Spring Boot: (latest stable, e.g. 3.3.3)
   - □ Group: com.example
   - □ Artifact: demo
   - □ Dependencies: Spring Web
3. Click Generate → it downloads demo.zip.

4. Extract it to any folder (for example C:\springboot\demo)



Project
○ Gradle - Groovy
○ Gradle - Kotlin ● Maven

Language
● Java ○ Kotlin ○ Groovy

Spring Boot
○ 4.0.0 (SNAPSHOT) ○ 4.0.0 (M3) ○ 3.5.7 (SNAPSHOT) ● 3.5.6
○ 3.4.11 (SNAPSHOT) ○ 3.4.10

Project Metadata

Group com.example

Artifact demo

Name demo

Description Demo project for Spring Boot

Package name com.example.demo

Packaging ● Jar ○ War

Java ○ 25 ○ 21 ● 17

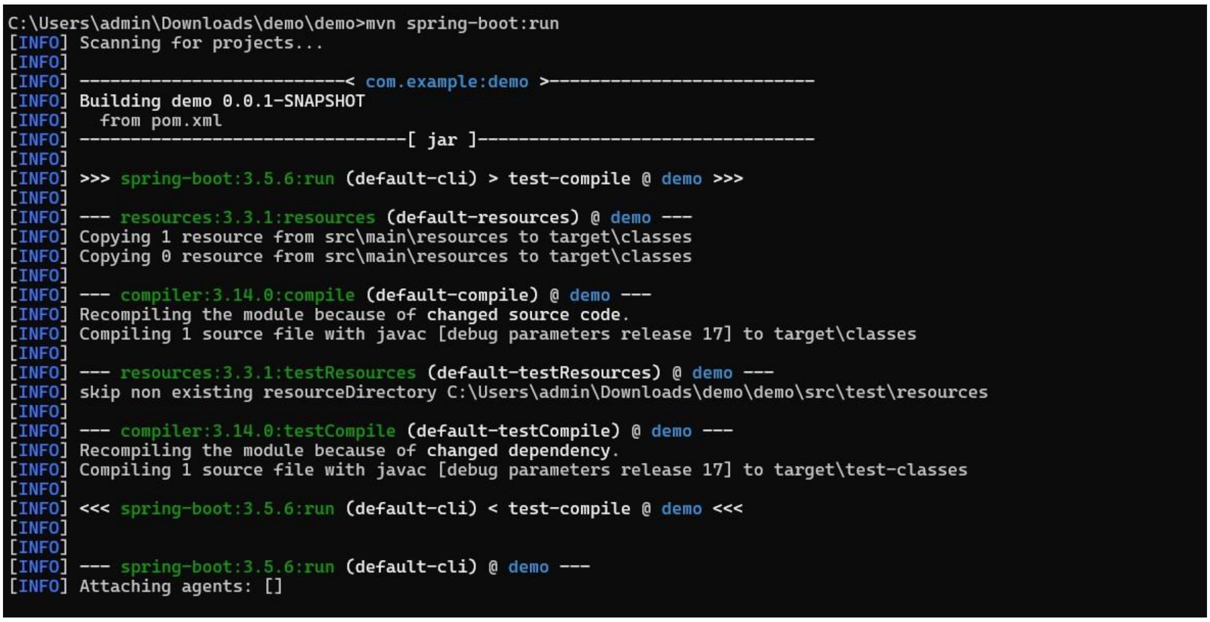
Dependencies

Spring Web WEB
Build web, including RESTful, applications using Spring MVC. Uses Apache Tomcat as the default embedded container.

Step 4 — Run the Spring Boot Application

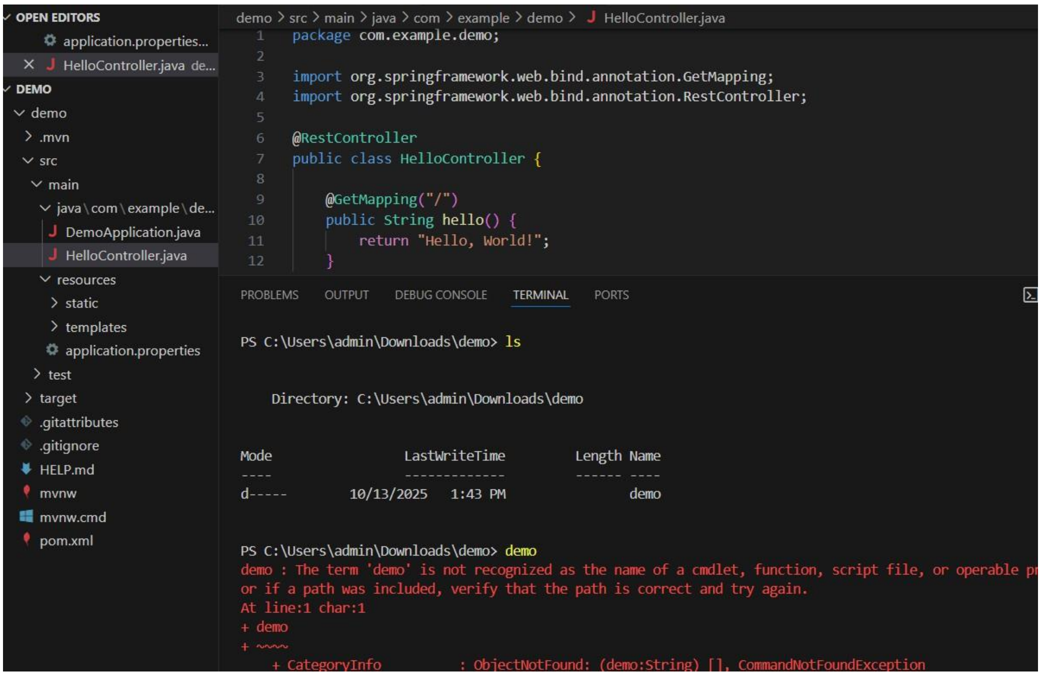
1. Open Command Prompt.
2. Navigate to your project folder:
   cd C:\springboot\demo
3. Run the app:

mvn spring-boot:run Expected output:
[INFO] Scanning for projects...
[INFO] Building demo 0.0.1-SNAPSHOT
...
Tomcat started on port(s): 8080 (http)
Started DemoApplication in 2.876 seconds (JVM running for 3.556)



```
C:\Users\admin\Downloads\demo\demo>mvn spring-boot:run
[INFO] Scanning for projects...
[INFO]
[INFO] --------------------------< com.example:demo >--------------------------
[INFO] Building demo 0.0.1-SNAPSHOT
[INFO]   from pom.xml
[INFO] --------------------------------[ jar ]---------------------------------
[INFO]
[INFO] >>> spring-boot:3.5.6:run (default-cli) > test-compile @ demo >>>
[INFO]
[INFO] --- resources:3.3.1:resources (default-resources) @ demo ---
[INFO] Copying 1 resource from src\main\resources to target\classes
[INFO] Copying 0 resource from src\main\resources to target\classes
[INFO]
[INFO] --- compiler:3.14.0:compile (default-compile) @ demo ---
[INFO] Recompiling the module because of changed source code.
[INFO] Compiling 1 source file with javac [debug parameters release 17] to target\classes
[INFO]
[INFO] --- resources:3.3.1:testResources (default-testResources) @ demo ---
[INFO] skip non existing resourceDirectory C:\Users\admin\Downloads\demo\demo\src\test\resources
[INFO]
[INFO] --- compiler:3.14.0:testCompile (default-testCompile) @ demo ---
[INFO] Recompiling the module because of changed dependency.
[INFO] Compiling 1 source file with javac [debug parameters release 17] to target\test-classes
[INFO]
[INFO] <<< spring-boot:3.5.6:run (default-cli) < test-compile @ demo <<<
[INFO]
[INFO]
[INFO] --- spring-boot:3.5.6:run (default-cli) @ demo ---
[INFO] Attaching agents: []
```

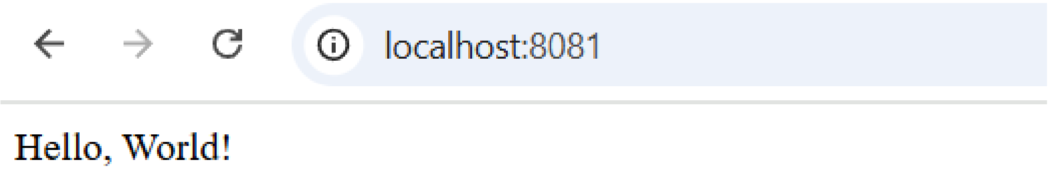
Step 5 — Verify in Browser
Open a browser and go to: http://localhost:8080
If your app has a default controller (for example): @RestController
public class HelloController { @GetMapping(/)
public String hello() { return Hello, Spring Boot!;
}
}



```java
package com.example.demo;

import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.RestController;

@RestController
public class HelloController {

    @GetMapping("/")
    public String hello() {
        return "Hello, World!";
    }
```

```
PS C:\Users\admin\Downloads\demo> ls


    Directory: C:\Users\admin\Downloads\demo


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----        10/13/2025   1:43 PM                demo


PS C:\Users\admin\Downloads\demo> demo
demo : The term 'demo' is not recognized as the name of a cmdlet, function, script file, or operable pr
or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ demo
+ ~~~~
    + CategoryInfo          : ObjectNotFound: (demo:String) [], CommandNotFoundException
```

Expected browser output: Hello, Spring Boot!



Hello, World!

11. Write a simple program in JavaScript and perform testing using Karate testing.

Step 1: Create the JavaScript program

```
// calculator.js
function add(a, b) {
  return a + b;
}
function subtract(a, b) {
  return a - b;
}
module.exports = { add, subtract };
```

Step 2: Create Karate Test

Create a test file named calculator-test.feature under src/test/java/examples/ (or any path).

```
Feature: Test Calculator JS Functions

  Scenario: Verify addition
    * def calc = call read('classpath:calculator.js')
    * def result = calc.add(10, 5)
    * print 'Addition Result:', result
    * match result == 15

  Scenario: Verify subtraction
    * def calc = call read('classpath:calculator.js')
    * def result = calc.subtract(10, 5)
    * print 'Subtraction Result:', result
    * match result == 5
```

Step 3: Run the Karate Test

```
mvn test -Dtest=calculator-test.feature
```

Output:

```
--------------------------------------------------------
feature: calculator-test.feature
--------------------------------------------------------
Scenario: Verify addition
Addition Result: 15
✓ match passed

Scenario: Verify subtraction
Subtraction Result: 5
✓ match passed

--------------------------------------------------------
2 Scenarios (2 passed)
2 Steps (2 passed)
--------------------------------------------------------
```

Aim: Develop test cases for the above containerized application using Spring boot testing.

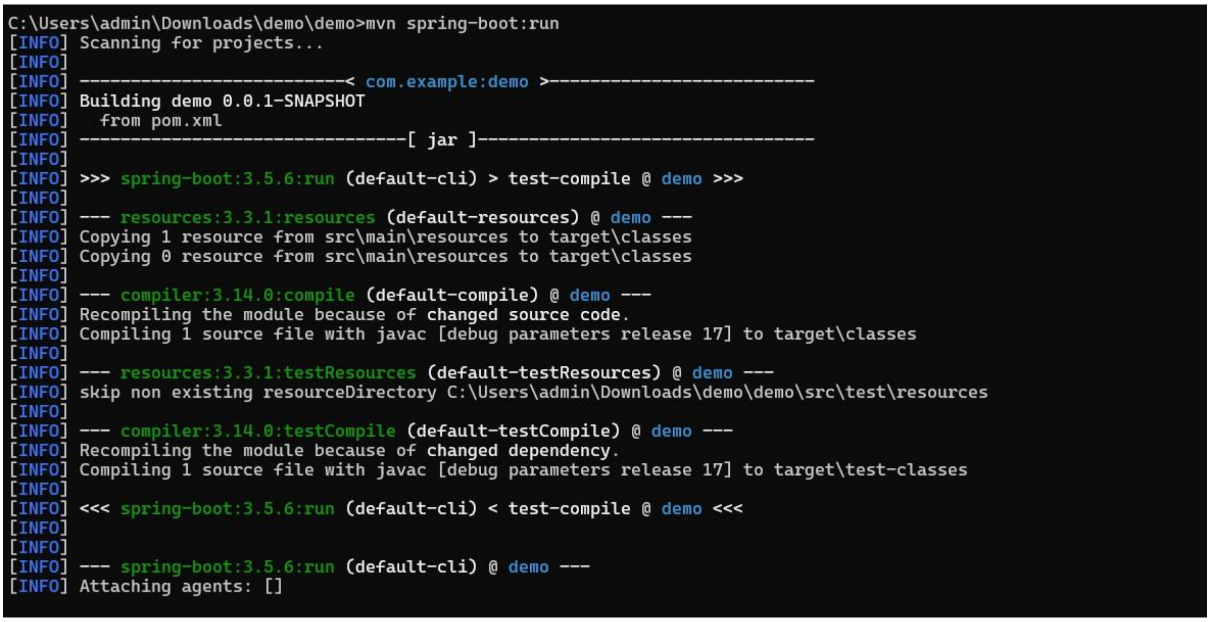
STEPS:

1. Open Command Prompt.
2. Navigate to your project folder:

cd C:\springboot\demo

3. Run the app:

mvn spring-boot:run Expected output:
[INFO] Scanning for projects...
[INFO] Building demo 0.0.1-SNAPSHOT
...
Tomcat started on port(s): 8080 (http)
Started DemoApplication in 2.876 seconds (JVM running for 3.556)

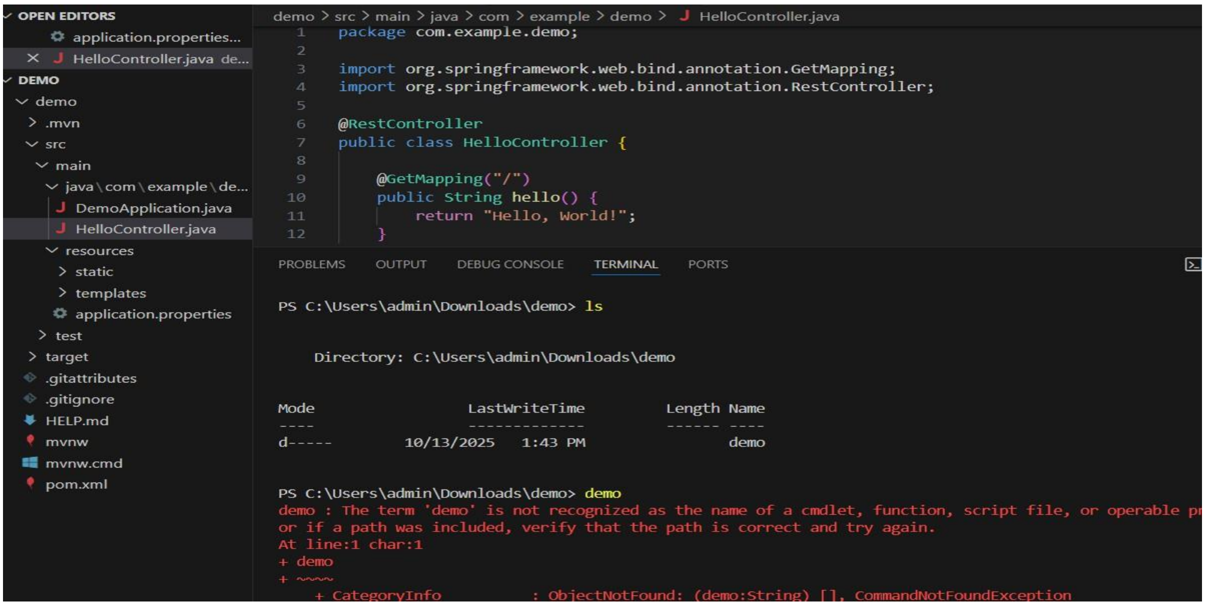


```
C:\Users\admin\Downloads\demo\demo>mvn spring-boot:run
[INFO] Scanning for projects...
[INFO]
[INFO] --------------------------< com.example:demo >--------------------------
[INFO] Building demo 0.0.1-SNAPSHOT
[INFO]   from pom.xml
[INFO] --------------------------------[ jar ]---------------------------------
[INFO]
[INFO] >>> spring-boot:3.5.6:run (default-cli) > test-compile @ demo >>>
[INFO]
[INFO] --- resources:3.3.1:resources (default-resources) @ demo ---
[INFO] Copying 1 resource from src\main\resources to target\classes
[INFO] Copying 0 resource from src\main\resources to target\classes
[INFO]
[INFO] --- compiler:3.14.0:compile (default-compile) @ demo ---
[INFO] Recompiling the module because of changed source code.
[INFO] Compiling 1 source file with javac [debug parameters release 17] to target\classes
[INFO]
[INFO] --- resources:3.3.1:testResources (default-testResources) @ demo ---
[INFO] skip non existing resourceDirectory C:\Users\admin\Downloads\demo\demo\src\test\resources
[INFO]
[INFO] --- compiler:3.14.0:testCompile (default-testCompile) @ demo ---
[INFO] Recompiling the module because of changed dependency.
[INFO] Compiling 1 source file with javac [debug parameters release 17] to target\test-classes
[INFO]
[INFO] <<< spring-boot:3.5.6:run (default-cli) < test-compile @ demo <<<
[INFO]
[INFO]
[INFO] --- spring-boot:3.5.6:run (default-cli) @ demo ---
[INFO] Attaching agents: []
```

Verify in Browser

Open a browser and go to: http://localhost:8080

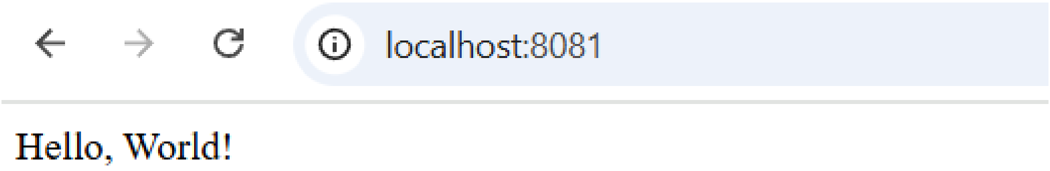
If your app has a default controller (for example): @RestController
public class HelloController { @GetMapping(/)
public String hello() { return Hello, Spring Boot!t;;
}}



```java
package com.example.demo;

import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.RestController;

@RestController
public class HelloController {

    @GetMapping("/")
    public String hello() {
        return "Hello, World!";
    }
```

```
PS C:\Users\admin\Downloads\demo> ls


    Directory: C:\Users\admin\Downloads\demo


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----        10/13/2025   1:43 PM                demo


PS C:\Users\admin\Downloads\demo> demo
demo : The term 'demo' is not recognized as the name of a cmdlet, function, script file, or operable pr
or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ demo
+ ~~~~
    + CategoryInfo          : ObjectNotFound: (demo:String) [], CommandNotFoundException
```

Expected browser output: Hello, Spring Boot!



Hello, World!